PART A

IONOSPHERIC DATA

ISSUED
APRIL 1957

U. S. DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS
CENTRAL RADIO PROPAGATION LABORATORY
BOULDER, COLORADO

CRPL-F 152
PART A

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CENTRAL RADIO PROPAGATION LABORATORY
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CONTENTS

SYMBOLS, TERMINOLOGY, CONVENTIONS

Beginning with data reported for January 1952, and continuing through December 1956, the symbols, terminology, and conventions for the determination of median values used in this report (CRPL-F series) conform as far as practicable to those adopted at the Sixth Meeting of the International Radio Consultative Committee (C.C.I.R.) in Geneva, 1951. Excerpts concerning symbols and terminology from Document No. 626-E of this Meeting are given on pages 2-7 of the report CRPL-F89, "Ionospheric Data," issued January 1952. Reprints of these pages are available upon request.

Beginning with data for January 1957, the symbols used are given in NBS Report 5033, "Summary of Changes in Ionospheric Vertical Soundings, Observing and Scaling Procedures - Effective 1 January 1957," which draws upon the First Report of the Special Committee on World-Wide Ionospheric Soundings (URSI/AGI), Brussels, Sept. 2, 1956. A list of these symbols is available upon request.

Beginning with data for January 1945, median values are published wherever possible. Where averages are reported, they are, at any hour, the average for all the days during the month for which numerical data exist.

The following conventions are used in determining the medians for hours when no measured values are given because of equipment limitations and ionospheric irregularities. Symbols used are those given above.

a. For all ionospheric characteristics:

Values missing because of A, C, F, H, L, N, R or S are omitted from the median count.

b. For critical frequencies and virtual heights:

Values of foF2 (and foE near sunrise and sunset) missing because of E are counted as equal to or less than the lower limit of the recorder. Values of h'F (and h'E near sunrise and sunset) missing for this reason are counted usually as equal to or greater than the median. Other characteristics missing because of E are omitted from the median count.

Values missing because of G are counted:

1. For foF2, as equal to or less than foF1.
2. For h'F2, as equal to or greater than the median.

The symbol W is included in the median count only when it replaces a height characteristic; the descriptive symbol D, only when it replaces a frequency characteristic.

Values missing for any other reason are omitted from the median count.

c. For MUF factor (M-factors):

Values missing because of G or W are counted as equal to or less than the median.

Values missing for any other reason are omitted from the median count.

d. For sporadic E (Es):

Values of fEs missing because of E or G (and B when applied to the daytime E region only) are counted as equal to or less than the median foE, or equal to or less than the lower frequency limit of the recorder.

At night B for fEs is counted on the low side when there is a numerical value of foF2; otherwise it is omitted from the median count.

Values of fEs missing for any other reason, and values of h'Es missing for any reason at all are omitted from the median count.

Beginning with data for November 1945, doubtful monthly median values for ionospheric observations at Washington, D. C., are indicated by parentheses, in accordance with the practice already in use for doubtful hourly values. The following are the conventions used to determine whether or not a median value is doubtful:

1. If the count is four or less, the data are considered insufficient and no median value is computed.

2. For the F2 layer, h'F or foEs, if the count is from five to nine, the median is considered doubtful. The E and F1 layers are so regular in their characteristics that, as long as the count is at least five, the median is not considered doubtful. A count of at least 5 is considered sufficient for an h'Es median.

3. For all layers, if more than half of the data used to compute the medians are doubtful (either doubtful or interpolated), the median is considered doubtful.

The same conventions are used by the CRPL in computing the medians from tabulations of daily and hourly data for stations other than Washington, beginning with the tables in IRPL-F18.

The tables and graphs of ionospheric data are correct for the values reported to the CRPL, but, because of variations in practice in the interpretation of records and scaling and manner of reporting values, may at times give an erroneous conception of typical ionospheric characteristics at the station. Some of the errors are due to:

a. Differences in scaling records when spread echoes are present.

b. Omission of values when foF2 is less than or equal to foF1, leading to erroneously high values of monthly averages or median values.

c. Omission of values when critical frequencies are less than the lower frequency limit of the recorder, also leading to erroneously high values of monthly average or median values.

These effects were discussed on pages 6 and 7 of the previous F-series report IRPL-F5.

Ordinarily, a blank space in the fEs or foEs column of a table is the result of the fact that a majority of the readings for the month are below the lower limit of the recorder or less than the corresponding values of foE. Blank spaces at the beginning and end of columns of h'F2 or h'F1, foF1, h'E, and foE are usually the result of diurnal variation in these characteristics. Complete absence of medians of h'F1 and foF1 is usually the result of seasonal effects.

The dashed-line prediction curves of the graphs of ionospheric data are obtained from the predicted zero-muf contour charts of the CRPL-D series publications. The following points are worthy of note:

a. Predictions for individual stations used to construct the charts may be more accurate than the values read from the charts since some smoothing of the contours is necessary to allow for the longitude effect within a zone. Thus, inasmuch as the predicted contours are for the center of each zone, part of the discrepancy between the predicted and observed values as given in the F series may be caused by the fact that the station is not centrally located within the zone.

b. The final presentation of the predictions is dependent upon the latest available ionospheric and radio propagation data, as well as upon predicted sunspot number.

c. There is no indication on the graphs of the relative reliability of the data; it is necessary to consult the tables for such information.

d. The tables may contain median values of either foEs or fEs. The graph of median Es corresponds to the table. Percentage curves of fEs are estimated from values of foEs when necessary.

PREDICTED AND OBSERVED SUNSPOT NUMBERS

The following predicted smoothed 12-month running-average Zürich sunspot numbers were used in constructing the contour charts:

Month	Predicted Sunspot Number										
	1957	1956	1955	1954	1953	1952	1951	1950	1949	1948	1947
December		150	42	11	15	33	53	86	108	114	126
November		147	35	10	16	38	52	87	112	115	124
October		135	31	10	17	43	52	90	114	116	119
September	150*	119	30	8	18	46	54	91	115	117	121
August	150*	105	27	8	18	49	57	96	111	123	122
July	150*	95	22	8	20	51	60	101	108	125	116
June	150*	89	18	9	21	52	63	103	108	129	112
May	150*	77	16	10	22	52	68	102	108	130	109
April	150*	68	13	10	24	52	74	101	109	133	107
March	150*	60	14	11	27	52	78	103	111	133	105
February	150*	53	14	12	29	51	82	103	113	133	90
January	150*	48	12	14	30	53	85	105	112	130	88

*This number is believed representative of solar activity at a maximum portion of the current sunspot cycle.

The latest available information follows concerning the corresponding observed Zürich numbers (some of which may be subject to minor change) beginning with the minimum of April 1954.

Observed Sunspot Number

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1954				3	4	4	5	7	8	8	9	12
1955	14	16	19	23	29	35	40	46	55	64	73	81
1956	89	98	109	119	127	137	145	148	149			

WORLD-WIDE SOURCES OF IONOSPHERIC DATA

The ionospheric data given here in tables 1 to 72 and figures 1 to 144 were assembled by the Central Radio Propagation Laboratory for analysis and correlation, incidental to CRPL prediction of radio propagation conditions. The data are median values unless otherwise indicated. The following are the sources of the data in this issue:

Republica Argentina, Ministerio de Marina:
- Buenos Aires, Argentina
- Decepcion I.

Commonwealth of Australia, Ionospheric Prediction Service of the Commonwealth Observatory:
- Brisbane, Australia
- Canberra, Australia
- Hobart, Tasmania
- Townsville, Australia

University of Graz:
- Graz, Austria

British Department of Scientific and Industrial Research, Radio Research Board:
- Falkland Is.
- Ibadan, Nigeria (University College of Ibadan)
- Inverness, Scotland
- Port Lockroy
- Singapore, British Malaya
- Slough, England

Defence Research Board, Canada:
- Baker Lake, Canada
- Churchill, Canada

National Laboratory of Radio-Electricity (French Ionospheric Bureau):
- Casablanca, Morocco
- Poitiers, France

The Royal Netherlands Meteorological Institute:
- De Bilt, Holland

Central Institute of Meteorology, Budapest, Hungary:
- Budapest, Hungary

Icelandic Post and Telegraph Administration:
- Reykjavik, Iceland

Christchurch Geophysical Observatory, New Zealand Department of Scientific and Industrial Research:
Campbell I.
Rarotonga, Cook Is.

Norwegian Defence Research Establishment, Kjeller per Lillestrom, Norway:
Oslo, Norway

Manila Observatory:
Baguio, P. I.

South African Council for Scientific and Industrial Research:
Capetown, Union of South Africa
Johannesburg, Union of South Africa

Research Institute of National Defence, Stockholm, Sweden:
Kiruna, Sweden
Upsala, Sweden
Lycksele, Sweden

Post, Telephone and Telegraph Administration, Berne, Switzerland:
Schwarzenburg, Switzerland

United States Army Signal Corps:
Ft. Monmouth, New Jersey
Okinawa I.
Thule, Greenland
White Sands, New Mexico

National Bureau of Standards (Central Radio Propagation Laboratory):
Anchorage, Alaska
Fairbanks, Alaska (Geophysical Institute of the University of Alaska)
Maui, Hawaii
Narsarssuak, Greenland
Point Barrow, Alaska
Puerto Rico, W. I.
San Francisco, California (Stanford University)
Washington, D. C.

HOURLY IONOSPHERIC DATA AT WASHINGTON, D. C.

The data given in tables 73 through 84 follow the scaling practices given in the report IRPL-C61, "Report of International Radio Propagation Conference," pages 36 to 39, and the median values are determined by the conventions given above under "Symbols, Terminology, Conventions." Beginning with September 1949, the data are taken at Ft. Belvoir, Virginia.

The interpretation of a cell is as follows: U F
32

The U is a qualifying symbol meaning doubtful. Other qualifying symbols are I, interpolated, D, greater than, E, less than, J, ordinary component deduced from extraordinary, and T, value determined by a sequence of observations. Absence of a letter in the upper left position means full weight is given to the observation.

Symbols such as F above are given in the upper right position.

There should be no difficulty in the placing of the decimal point. For the time being, a final zero will be found in each value of foF1. Thus at a later date it will be possible to register more closely scaled values of this characteristic, whenever such are reported.

EXAMPLES OF IONOSPHERIC VERTICAL SOUNDINGS
FT. MONMOUTH, N. J.; JAN. 25, 1957
(Geomagnetic Latitude 51°N)

The following ionograms were obtained at the Signal Corps Ft. Monmouth, N.J. vertical sounding station. They are typical of day and night conditions for January at this geomagnetic latitude. Ionospheric data are scaled directly from these records onto the daily f-plot, a graph of frequency characteristics vs. time. The f-plot for the day represented by these soundings is found on the following page. Medians as found in the Tables of Ionospheric Data are calculated using hourly values taken from the f-plot (where prepared daily) or directly from the ionogram.

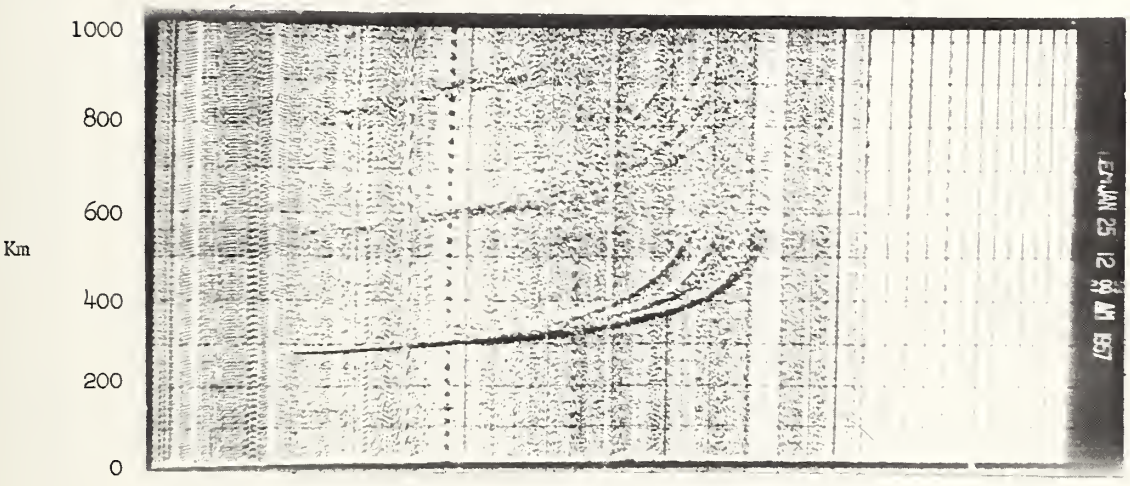


Fig. A. Ft. Monmouth, N.J., Jan. 25, 1957, 0000 hours, 75°W time.

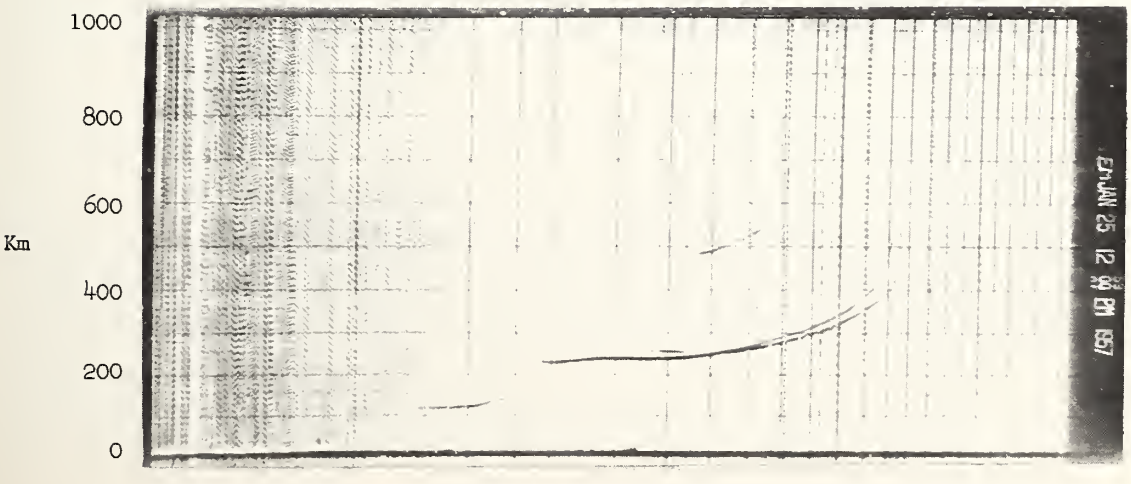
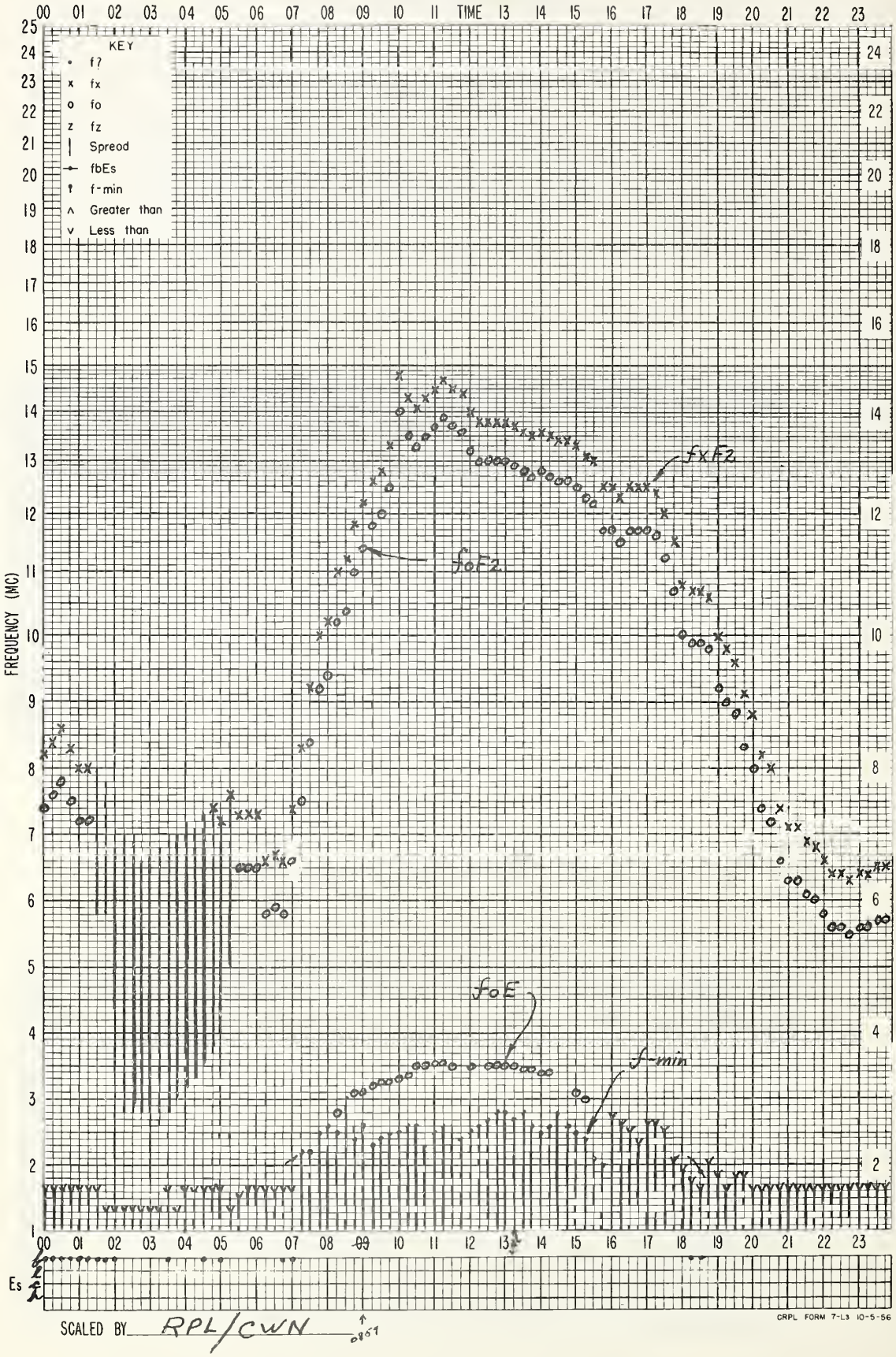


Fig. B. Ft. Monmouth, N.J., Jan. 25, 1957, 1200 hours, 75°W time.

STATION IONFM f - PLOT OF IONOSPHERIC DATA DATE 25 JAN 57



SCALED BY RPL/CWN

CRPL FORM 7-L3 10-5-56

Radio Noise Data

The results of radio noise measurements are presented in the following graphs and tables. These are based on three parameters of the noise: (1) the mean power, (2) the mean envelope voltage, and (3) the mean logarithm of the envelope voltage. The mean power averaged over a period of several minutes is the basic parameter and is expressed as an effective antenna noise figure, F_a. F_a is defined as the noise power available from an equivalent lossless antenna in db above ktb (the thermal noise power available from a passive resistance) where

k = Boltzman's constant (1.38×10^{-23} joules per degree Kelvin)

t = Absolute room temperature (taken as 288° K)

b = Bandwidth in cycles per second.

The mean voltage and mean logarithm are expressed as deviations, V_d and L_d respectively, in db below the mean power.

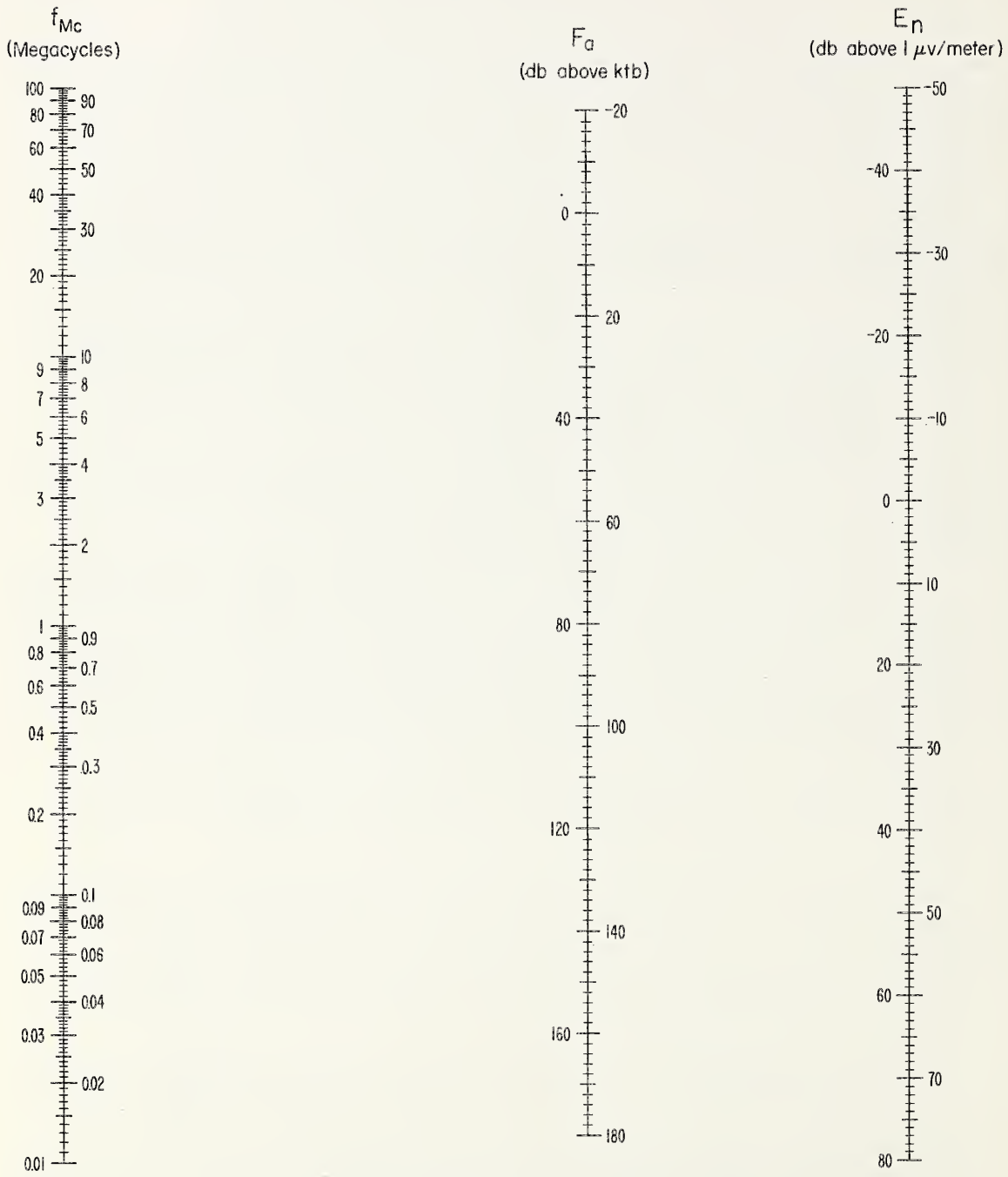
Measurements of these parameters were made with the National Bureau of Standards Radio Noise Recorder, Model ARN-2, which has an effective noise bandwidth of 280 cycles per second and uses a standard 21.75' vertical antenna. A 15 minute recording is made on each frequency each hour, and these 15 minute samples are taken as representing the noise conditions for the full hour. The month-hour medians, F_{am}, V_{dm}, and L_{dm} are determined from these hourly values for each of the corresponding parameters and the resulting medians are plotted at the half-hour point on the curves.

The upper and lower decile values of F_a are also reported in the following tabulation to give an indication of the extent of the variation of the noise power from day to day at a given time of day. These are expressed in db above and below the month-hour median, F_{am}, and designated by D_u and D_ℓ respectively.

If it is desirable to convert F_a to an r.m.s. noise field strength, E_n, the nomogram or the equation on the following page may be used.

Information on expected worldwide noise levels and their application to systems problems is presented in NBS Circular 557 (available from the Supt. of Documents, U. S. Govt. Printing Office, Washington 25, D. C.). More recent estimates of radio noise levels are given in CCIR Report No. 65, "Report on Revision of Atmospheric Radio Noise Data", Warsaw, 1956 (available from the International Telecommunication Union, Geneva).

NOMOGRAM FOR TRANSFORMING EFFECTIVE ANTENNA NOISE FIGURE TO NOISE FIELD STRENGTH AS A FUNCTION OF FREQUENCY



$$E_n = F_a + 20 \log_{10} f_{Mc} - 65.5$$

F_a = Effective Antenna Noise Figure = External Noise Power Relative to ktb Available from an Equivalent Short, Lossless, Vertical Antenna in db Above ktb.

E_n = Equivalent Vertically Polarized Ground Wave R.M.S. Noise Field Strength in db Above 1 μv/meter for a 1 kc Bandwidth.

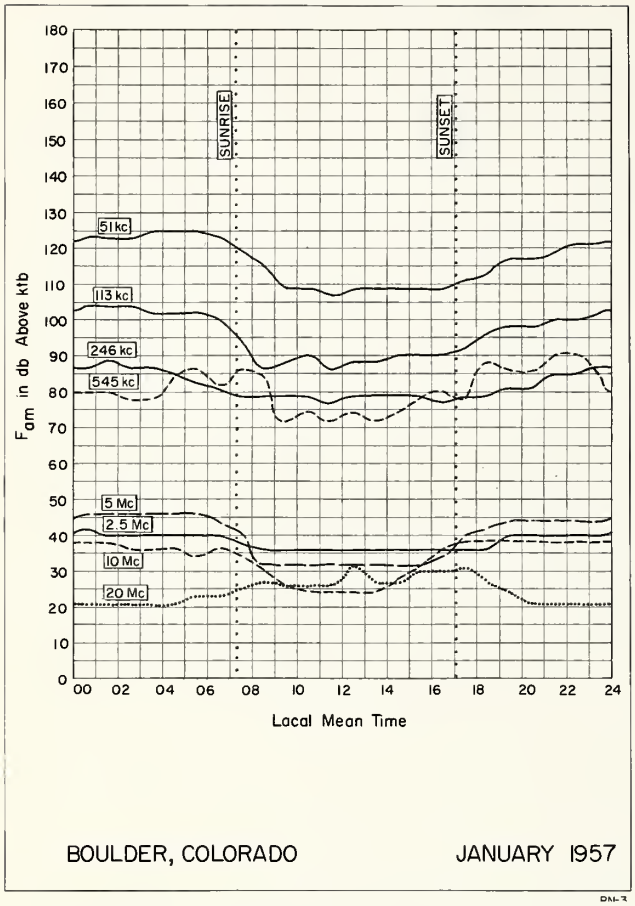
f_{Mc} = Frequency in Megacycles.

RADIO NOISE DATA

Station Boulder, Colorado Lat. 40.1° N. Long. 105.1° W Type Recorder ARN-2 Month Jan. 19 57

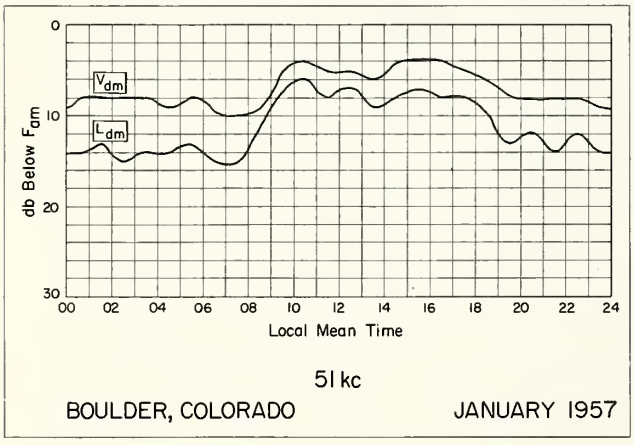
	Local Mean Time																							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
	51 kc																							
F_{am}	123	123	123	125	125	125	123	119	115	109	109	107	109	109	109	109	109	111	113	117	117	119	121	121
D_u	6	6	10	6	4	4	6	8	8	12	10	6	6	12	10	8	10	8	10	8	12	10	8	10
D_ℓ	6	4	4	4	4	4	2	2	4	2	4	2	4	4	4	6	4	6	4	8	4	6	6	6
V_{dm}	8	8	8	8	9	8	10	10	9	5	4	5	5	6	4	4	4	5	6	8	8	8	8	9
L_{dm}	14	13	15	14	14	13	15	15	11	7	6	8	7	9	8	7	8	8	10	13	12	14	12	14
	113 kc																							
F_{am}	104	104	104	102	102	102	100	94	86	88	90	86	88	88	90	90	90	92	96	98	98	100	100	102
D_u	14	12	12	10	10	6	6	12	12	16	14	8	8	12	12	16	16	18	16	16	16	14	12	14
D_ℓ	10	4	6	4	6	8	8	8	2	4	6	2	2	2	4	4	4	4	6	8	6	4	4	6
V_{dm}	8	8	8	8	8	8	7	6	3	2	4	3	2	2	2	2	2	4	5	6	6	6	6	8
L_{dm}	13	13	14	13	12	12	11	7	5	4	6	5	4	4	5	4	5	6	9	10	10	11	12	11
	246 kc																							
F_{am}	87	89	87	87	85	83	81	79	79	79	79	77	79	79	79	79	77	79	79	81	81	85	85	87
D_u	14	10	8	8	8	10	8	8	8	6	6	8	4	4	4	8	18	16	20	18	12	14	14	14
D_ℓ	4	6	6	6	4	6	6	4	6	4	6	2	4	4	4	4	4	4	2	4	2	6	4	6
V_{dm}	5	6	6	6	6	6	4	2	2	2	3	3	2	3	3	2	3	3	4	4	4	6	6	6
L_{dm}	10	10	8	9	8	8	6	3	4	5	5	5	5	4	5	5	5	5	6	6	6	9	8	9
	545 kc																							
F_{am}	80	80	78	78	84	86	82	86	84	72	74	72	74	72	74	78	80	78	88	86	86	90	90	84
D_u	14	8	8	14	8	8	8	8	10	6	8	6	4	10	6	4	4	10	4	8	8	6	4	6
D_ℓ	4	6	6	8	14	8	12	14	12	4	4	6	4	2	4	6	6	6	10	6	6	6	8	10
V_{dm}	5	5	6	6	6	4	4	5	4	3	3	2	2	2	2	2	7	3	4	2	4	4	4	6
L_{dm}	7	8	8	8	7	5	6	10	8	6	5	3	5	4	4	4	10	5	5	6	6	6	6	9
	2.5 Mc																							
F_{am}	42	40	40	40	40	40	40	38	36	36	36	36	36	36	36	36	36	36	36	40	40	40	40	40
D_u	6	6	10	8	10	6	6	6	12	10	2	2	2	2	2	10	10	8	6	6	2	16	6	6
D_ℓ	4	2	4	2	2	2	2	4	4	4	4	4	4	4	2	4	4	4	2	6	4	4	2	2
V_{dm}																								
L_{dm}																								
	5 Mc																							
F_{am}	46	46	46	46	46	46	44	40	32	32	32	32	32	32	32	32	34	40	42	44	44	44	44	44
D_u	6	6	6	6	8	8	6	6	4	4	2	2	2	2	8	8	4	4	6	6	4	10	6	6
D_ℓ	4	6	4	4	6	2	4	2	2	6	2	2	4	2	4	4	4	8	4	6	4	4	4	4
V_{dm}																								
L_{dm}																								
	10 Mc																							
F_{am}	38	38	36	36	36	34	36	34	30	26	24	24	24	24	28	32	36	38	38	38	38	38	38	38
D_u	4	4	6	4	6	8	4	4	4	6	2	2	2	6	4	14	6	6	6	6	2	4	4	4
D_ℓ	4	4	4	4	6	4	4	2	4	4	2	2	6	4	8	8	6	6	4	4	2	4	2	4
V_{dm}																								
L_{dm}																								
	20 Mc																							
F_{am}	21	21	21	21	21	23	23	25	27	26	26	26	32	27	27	30	30	31	27	24	21	21	21	21
D_u	3	3	3	3	3	1	3	3	8	4	5	21	22	14	26	18	32	26	19	16	9	3	3	3
D_ℓ	2	2	0	0	0	2	2	2	4	3	3	5	8	4	4	5	5	6	4	3	2	2	2	2
V_{dm}																								
L_{dm}																								

GRAPHS OF RADIO NOISE DATA



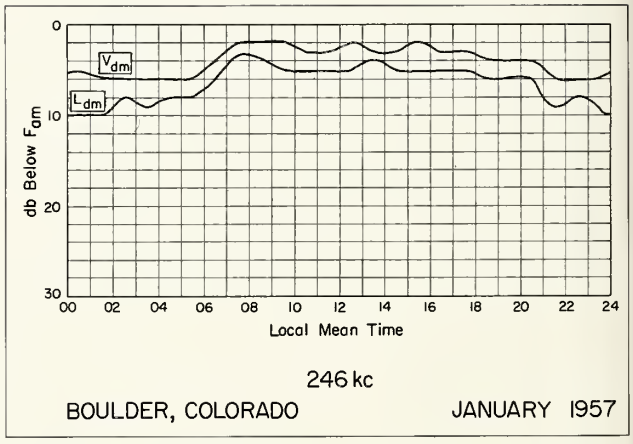
BOULDER, COLORADO JANUARY 1957

RN-2



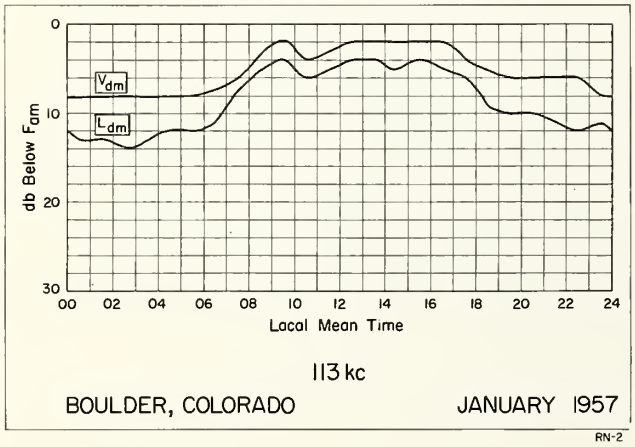
51 kc

BOULDER, COLORADO JANUARY 1957



246 kc

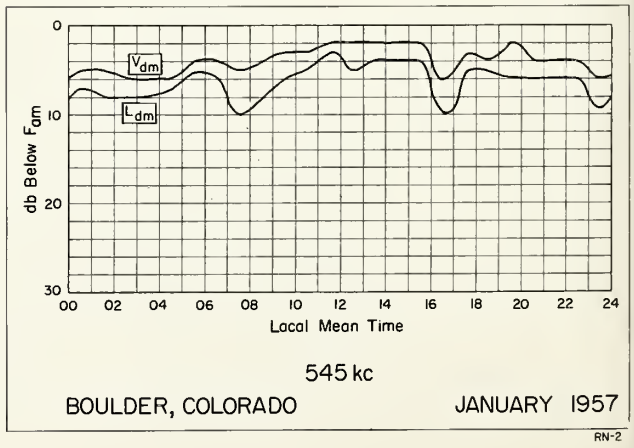
BOULDER, COLORADO JANUARY 1957



113 kc

BOULDER, COLORADO JANUARY 1957

RN-2



545 kc

BOULDER, COLORADO JANUARY 1957

RN-2

Table 1

Washington, D. C. (38.7°N, 77.1°W) March 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		7.0	280					2.70
01		6.6	280					2.70
02		6.4	280					2.65
03		5.8	280					2.65
04		(5.4)	270					(2.60)
05		4.8	280					2.70
06		5.5	280		---	----		2.85
07	---	7.6	245		117	2.20		3.10
08	(255)	9.8	235	---	109	2.80		3.10
09	240	10.7	225	---	109	3.15		3.00
10	250	11.6	210	5.2	106	3.40		2.90
11	250	12.2	215	---	105	3.50		2.80
12	260	12.6	215	5.5	108	3.70		2.80
13	265	12.3	220	5.5	109	3.70		2.75
14	(260)	12.2	225	5.8	109	3.60		2.70
15	255	11.9	230	---	109	3.45		2.70
16	(255)	11.7	235	---	109	3.15		2.75
17	(250)	11.5	240		111	2.60		2.80
18		11.1	240		129	1.90		2.85
19		10.0	240					2.80
20		9.0	245					2.80
21		8.2	250					2.80
22		7.6	270					2.75
23		7.2	275					2.70

Time: 75.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 2

Point Barrow, Alaska (71.3°N, 156.8°W) February 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	foEs	(M3000)F2
00		---					3.9	
01		---					(4.4)	----
02		---					3.3	
03		---					3.2	
04		---					2.7	
05		---						----
06		---					2.2	----
07		---					2.3	----
08		---			---	---		----
09		(5.7)			---	---		(2.95)
10		(6.4)			---	---		3.00
11		(7.0)			---	---		3.10
12		(8.2)			---	---		3.10
13		8.6			---	---		3.10
14		9.0			---	---		3.00
15		(9.5)			---	---		3.00
16		(9.6)			---	---		3.00
17		8.7			---	---		3.10
18		(6.5)						(2.80)
19		(5.4)						----
20		(4.4)					2.5	----
21		(3.9)					2.9	(2.90)
22		---					3.0	----
23		---					4.6	----

Time: 150.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 3

Lycksele, Sweden (64.6°N, 18.8°E) February 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00		5.0	325				2.3	2.7
01		4.9	330				2.3	2.7
02		(5.5)	320				2.2	2.7
03		5.2	300				2.1	2.7
04		5.2	290				1.8	2.8
05		5.2	265					2.8
06		4.6	260		---	----		2.8
07		5.3	250		---	E		2.9
08	---	6.9	240		120	1.80		3.1
09	---	8.5	240	---	115	2.10		3.2
10	---	10.3	240	---	110	2.30		3.2
11	---	11.1	240	---	110	2.45		3.2
12	---	11.8	230	---	110	2.50		3.2
13	---	12.0	230	---	110	2.50		3.2
14	---	11.2	230	---	110	2.40		3.2
15	---	10.5	225	---	125	2.20		3.2
16	---	10.1	225		---	1.80		3.2
17	---	8.0	220		---	E		3.2
18		5.9	235		---	E		3.05
19		5.2	255					3.0
20		4.9	285					2.8
21		4.5	295				1.8	2.8
22		(4.7)	320				2.2	2.7
23		5.0	320					2.7

Time: 15.0°E.
Sweep: 1.4 Mc to 17.0 Mc in 6 minutes, automatic operation.

Table 4

Anchorage, Alaska (61.2°N, 149.9°W) February 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	foEs	(M3000)F2
00		2.6						2.60
01		2.7					2.0	2.50
02		(2.6)					1.7	(2.45)
03		2.7						2.40
04		(2.9)						2.45
05		2.6						2.50
06		3.0						2.50
07		3.5						2.70
08		5.8			---	----		2.95
09		7.4			119	2.15		3.05
10		9.0			119	2.50		3.00
11		9.8			125	2.70		2.95
12		10.7			119	2.75		2.90
13		11.0			121	2.70		2.95
14		11.1			120	2.55		2.90
15		11.1			128	(2.30)		2.90
16		11.1			---	----		2.95
17		10.5			---	----		2.95
18		9.0						3.00
19		7.1						2.95
20		5.0						2.95
21		4.0						2.95
22		3.3						2.85
23		3.1						2.70

Time: 150.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 5

Oslo, Norway (60.0°N, 11.1°E) February 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		(3.4)	335					2.40
01		(3.4)	320					(2.50)
02		(2.9)	310					(2.50)
03		(2.8)	315					(2.50)
04		(2.8)	305					2.50
05		(2.8)	290					2.55
06		(3.1)	275				(1.6)	2.55
07		(3.7)	260		---	----		2.65
08		(6.1)	250		---	1.85		2.90
09		8.0	240		115	2.20		3.10
10		10.0	245		---	2.55		3.05
11		11.4	245		110	2.75		3.00
12		12.3	240		115	2.90		3.00
13		12.5	240		115	2.90		3.00
14		12.4	235		120	2.80		3.00
15		12.4	240		---	2.60		3.00
16		11.6	235		---	2.30		3.10
17		11.0	220		---	1.80		3.05
18		9.1	225				2.1	3.00
19		(6.7)	240					2.90
20		(5.8)	245					(2.90)
21		4.9	250				1.7	2.75
22		4.2	280				1.7	2.55
23		3.6	295				1.3	2.45

Time: 15.0°E.
Sweep: 0.7 Mc to 25.0 Mc in 5 minutes, automatic operation.

Table 6

Upsala, Sweden (59.8°N, 17.6°E) February 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00		3.6	335					2.5
01		3.5	330					2.6
02		3.0	330					2.55
03		2.8	320					2.6
04		2.9	300					2.6
05		3.0	285					2.7
06		3.2	270		---	E		2.7
07		4.8	255		---	E	2.2	2.8
08	---	6.9	240	---	115	1.90	2.1	3.0
09	---	9.0	235	---	115	2.30		3.1
10	---	10.8	230	---	110	2.60		3.05
11	---	12.1	230	---	110	2.80		3.05
12	---	12.8	230	---	110	2.80		3.0
13	---	12.8	230	---	110	2.80		3.1
14	---	12.6	225	---	115	2.70		3.05
15	---	12.2	230	---	120	2.40		3.1
16	---	11.4	225		125	1.90		3.1
17		10.5	220		---	E		3.1
18		8.2	220		---	E		3.1
19		6.2	240					3.0
20		5.0	250					2.9
21		4.8	270					2.8
22		4.2	300					2.6
23		3.8	325					2.6

Time: 15.0°E.
Sweep: 1.4 Mc to 17.0 Mc in 6 minutes, automatic operation.

Table 7

Graz, Austria (47.1°N, 15.5°E) February 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	5.0						
01	310	4.6						
02	340	4.6						
03	340	4.4						
04	335	4.2						
05	300	3.9						
06	---	3.8						
07	250	6.0						
08	210	9.8						
09	210	D						
10	210	D				3.3		
11	210	0	205			3.5		
12	210	0				3.5		
13	210	0				3.5		
14	210	0				3.4		
15	220	0						
16	210	0						
17	210	11.3						
18	210	9.6						
19	225	7.9						
20	245	6.8						
21	260	6.0						
22	300	5.1						
23	300	5.0						

Time: 15.0°E.
Sweep: 2.5 Mc to 11.5 Mc in 2 minutes.

Table 8

Maui, Hawaii (20.8°N, 156.5°W) February 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		9.6	240				(1.6)	3.00
01		8.7	230				(1.2)	3.15
02		8.0	230					3.20
03		5.8	220					3.40
04		4.0	230					2.90
05		3.1	270					2.65
06		3.0	315					2.55
07		5.7	280		170	1.80		2.90
08		9.8	245		117	2.70		3.15
09	---	12.0	235		113	3.25		3.00
10	---	13.4	225		111	3.60	3.7	2.90
11	---	14.1	220		111	3.80		2.85
12	(340)	15.0	220		111	3.90		2.80
13	350	15.7	220	---	109	3.90		2.75
14	350	16.0	220	6.8	109	3.85		2.75
15	335	15.6	220	---	109	3.70		2.75
16	320	15.2	230	---	111	3.40	3.6	2.80
17	---	14.5	240		115	2.80	3.1	2.80
18	---	13.4	240		131	1.95	(2.8)	2.90
19		12.4	220				(2.5)	3.00
20		12.0	240				(3.0)	2.90
21		11.6	250				(3.1)	2.90
22		11.4	240				(2.8)	2.95
23		10.5	240				(2.5)	3.00

Time: 150.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 9

Puerto Rico, W. I. (18.5°N, 67.2°W) February 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		7.9	250					3.00
01		7.3	245					3.05
02		6.6	245				(2.5)	3.00
03		5.8	240				(2.4)	3.00
04		5.0	265					2.70
05		5.2	300				(2.4)	2.55
06		5.4	245					2.95
07		6.8	250					3.15
08	---	10.1	230		117	2.70		3.30
09	(240)	12.0	230		111	3.30		3.10
10	(250)	13.0	220		109	3.65	3.8	3.05
11	(270)	13.1	215		109	3.90	4.0	2.95
12	---	13.2	225		109	4.00	4.4	2.85
13	---	13.4	225	---	109	4.05	4.3	2.80
14	---	13.0	220	---	109	3.95	4.2	2.75
15	---	12.5	230	---	109	3.70	4.3	2.70
16		12.4	235		109	3.30	3.9	2.70
17		12.1	240		109	2.90	3.6	2.80
18		11.7	240		111	(2.10)	(3.6)	2.95
19		10.3	230				(4.1)	2.90
20		9.3	240				(3.8)	2.85
21		8.8	250				(3.0)	2.80
22		8.4	260				(2.5)	2.80
23		8.2	260					2.85

Time: 60.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 10

Thule, Greenland (76.6°N, 68.7°W) January 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		5.2	250					2.85
01		5.3	250					2.70
02		(4.8)	250					2.80
03		4.8	250					2.75
04		(4.2)	255					2.70
05		(4.5)	250					(2.80)
06		4.0	250					2.85
07		4.6	260					2.90
08		4.4	250					2.85
09		4.5	245					2.95
10		5.6	240					2.85
11		5.8	245					2.95
12		6.3	250					2.90
13		7.0	240					2.80
14		7.1	240					2.90
15		(7.1)	240					2.80
16		7.0	240					2.80
17		6.7	250					2.75
18		(6.5)	240					2.75
19		6.1	240					2.75
20		6.0	245					2.75
21		(5.8)	245					2.75
22		(5.4)	245					2.80
23		5.6	250					2.80

Time: 75.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 11

Point Barrow, Alaska (71.3°N, 156.8°W) January 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	foEs	(M3000)F2
00		---					4.7	----
01		---					4.4	----
02		---					4.0	
03		---					3.6	----
04		---					3.8	
05		---					2.7	----
06		---					2.5	
07		---					2.4	----
08		---					3.2	
09		---					3.2	----
10		(5.7)			---	---	3.0	(3.00)
11		(6.4)			---	---		(3.00)
12		7.9			---	---		3.10
13		8.4			---	---		3.00
14		9.0			---	---		3.10
15		(9.6)						3.00
16		(9.2)						(3.05)
17		(8.2)						3.00
18		(6.5)						(3.15)
19		(4.3)						(2.90)
20		(3.5)					2.0	(2.85)
21		---					2.8	----
22		---					2.5	----
23		---					4.8	

Time: 150.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 12

Fairbanks, Alaska (64.9°N, 147.8°W) January 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	foEs	(M3000)F2
00		(4.2)					3.5	(2.90)
01		(4.2)					4.2	(2.75)
02		(4.4)					4.4	(2.70)
03		(4.6)					4.6	(2.70)
04		(4.9)					4.0	(2.80)
05		(4.9)					3.7	(2.75)
06		(4.4)					2.4	(2.75)
07		(4.3)					2.5	(2.80)
08		(4.5)					1.5	(2.85)
09		(6.2)			---	----		(3.05)
10		(8.0)			149	2.00		(3.15)
11		9.6			128	2.20		3.10
12		11.0			122	2.30		3.05
13		11.6			140	2.20		3.10
14		11.6			141	2.00		3.05
15		10.8			---	----		3.00
16		10.4						3.00
17		9.2						3.00
18		7.2						3.00
19		(5.0)						(3.00)
20		(4.3)						(3.00)
21		(3.9)						(3.00)
22		(3.8)					3.0	(2.90)
23		(4.0)					3.6	(2.90)

Time: 150.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 13

Lycksele, Sweden (64.6°N, 18.8°E) January 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00		(3.5)	310				2.1	2.7
01		3.6	315				2.3	2.65
02		4.6	300				2.0	2.7
03		4.6	300				1.8	2.7
04		4.8	280					2.75
05		4.6	270				2.0	2.9
06		4.7	250				2.0	2.9
07		4.5	250		---	----		2.8
08		4.6	240		---	E		2.8
09		7.2	230		120	1.65		3.1
10		9.6	230		110	2.00		3.2
11		11.0	230		110	2.20		3.2
12	---	12.0	225	---	115	2.25		3.2
13		12.0	225		110	2.20		3.2
14		11.9	220		110	2.00		3.2
15		11.0	220		---	1.70		3.2
16		9.4	215		---	E		3.2
17		7.3	220		---	----		3.2
18		5.0	235					3.0
19		4.6	250					2.9
20		4.3	280					2.8
21		4.2	300				1.8	2.7
22		4.4	300				2.4	2.7
23		4.7	315				2.7	2.7

Time: 15.0°E.
Sweep: 1.4 Mc to 17.0 Mc in 6 minutes, automatic operation.

Table 14

Anchorage, Alaska (61.2°N, 149.9°W) January 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	foEs	(M3000)F2
00		(2.7)						(2.65)
01		(2.6)					1.8	2.55
02		(2.6)					2.7	(2.55)
03		2.6					2.4	2.50
04		(2.6)					1.7	(2.50)
05		(3.2)					2.2	2.65
06		3.1						2.55
07		3.2						2.65
08		(4.6)			---	---		(2.70)
09		6.6			115	1.85		2.90
10		9.1			135	(2.10)		3.05
11		10.7			129	2.30		3.05
12		11.3			121	2.40		3.00
13		12.4			125	(2.35)		2.95
14		12.4			129	(2.20)		3.00
15		11.2			(115)	(1.95)		2.95
16		10.4			---	---		2.95
17		9.5						2.95
18		8.0						2.95
19		5.6						3.00
20		4.0						2.90
21		3.5						2.95
22		(3.1)						(2.80)
23		(2.8)						(2.75)

Time: 150.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 15

Narsarssuak, Greenland (61.2°N, 45.4°W) January 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		---	<320				2.9	----
01		---	350				3.2	----
02		---	340				3.1	----
03		---	345				3.4	----
04		---	340				3.7	----
05		---	330				3.4	----
06		5.2	300				2.0	----
07		(4.5)	310					(2.90)
08		(4.8)	285					(2.90)
09		(7.4)	260					(3.05)
10		9.6	250		---	----		3.05
11	---	11.2	245		131	----		3.00
12	---	12.2	245		129	2.50		3.00
13	---	12.6	240		133	2.40		3.00
14		12.6	245		139	2.20		3.05
15		(11.7)	250		---	----		(3.00)
16		(10.2)	270		---	----		(3.10)
17		---	300				2.4	----
18		---	310				2.6	----
19		---	335				2.8	----
20		---	335				2.8	
21		---	320				3.0	
22		---	320				3.5	----
23		---	320				3.9	----

Time: 45.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 16

Oslo, Norway (60.0°N, 11.1°E) January 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		2.9	320					(2.40)
01		(2.9)	325				1.7	2.50
02		2.7	310				1.7	(2.45)
03		(2.9)	310				1.8	(2.50)
04		(2.9)	300				1.4	(2.55)
05		(3.0)	280				1.6	(2.60)
06		3.0	250				1.2	2.70
07		(2.8)	250					2.70
08		(4.8)	250		---	----	2.1	(2.55)
09		7.3	245		---	1.80	2.4	2.90
10		10.0	240		---	2.25	2.5	3.05
11		11.9	235		---	2.55	2.9	3.10
12		12.8	235		---	2.60	2.7	3.00
13		13.2	235		---	2.55	2.8	3.05
14		13.1	235		115	2.40	2.7	3.10
15		12.4	230		---	2.15	2.4	3.10
16		11.0	220		---	1.75	1.9	3.00
17		9.8	225		---	----	1.4	3.00
18		(7.4)	215				1.2	(3.00)
19		5.8	245					2.90
20		4.4	250					2.70
21		3.8	280					2.60
22		3.3	290					2.55
23		3.0	300					(2.50)

Time: 15.0°E.
Sweep: 0.7 Mc to 25.0 Mc in 5 minutes, automatic operation.

Table 17

Ft. Monmouth, New Jersey (40.3°N, 74.1°W) January 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		5.8	270					2.80
01		5.6	270				(2.4)	2.75
02		5.6	270				(3.2)	2.75
03		5.6	260				(2.8)	2.80
04		5.3	255				(2.4)	2.90
05		5.0	250					2.85
06		4.5	250				(2.8)	2.90
07		(5.8)	255				(2.8)	3.00
08		9.3	230		121	2.40		3.20
09		11.2	225		115	2.90	2.9	3.15
10	---	12.2	220		113	3.30		3.05
11	240	13.3	225		111	3.50		3.00
12	(235)	13.2	220		111	3.60		2.90
13	(250)	13.0	225		113	3.50	3.6	2.85
14	(230)	12.6	225		111	3.35		2.80
15	---	12.8	230		112	3.10		2.80
16		12.5	230		115	2.60		2.85
17		11.8	230		---	----	2.5	2.85
18		10.7	230				(2.7)	2.85
19		9.4	230				2.8	2.90
20		8.2	225				(3.0)	2.90
21		7.0	240					2.85
22		6.4	250					2.85
23		6.0	250					2.85

Time: 75.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 18

San Francisco, California (37.4°N, 122.2°W) January 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		3.8	<300					2.65
01		3.7	<275				(2.3)	2.65
02		3.8	295				(3.0)	2.65
03		3.6	270				(2.6)	2.70
04		3.5	280					2.60
05		3.4	<300					2.45
06		3.6	<300					2.60
07		>5.0	265				(3.1)	2.75
08		>9.0	235		---	----		(3.15)
09		>11.0	225		---	----	(3.2)	(3.25)
10		>12.0	225		---	>3.25		----
11	---	>12.0	230		119	>3.50		----
12	---	>12.5	230		(119)	>3.55	3.8	----
13	---	>12.0	230		(119)	>3.60		----
14	---	>12.0	230		116	>3.50		(2.65)
15	---	>12.0	235		119	>3.25	3.4	(2.70)
16		>11.7	235		---	----		2.75
17		>11.0	230					2.75
18		9.8	225					2.85
19		>8.0	230				(3.0)	2.90
20		6.6	235				(2.8)	2.95
21		5.2	240					2.90
22		4.3	260				(3.0)	2.80
23		3.8	<265					2.70

Time: 120.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 19

White Sands, New Mexico (32.3°N, 106.5°W) January 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		4.2	260				(2.4)	2.80
01		4.3	<255				(3.0)	2.80
02		4.2	<260				(2.4)	2.75
03		4.1	<260				(1.7)	2.75
04		3.7	<250					2.80
05		3.6	(255)				(3.2)	2.60
06		3.5	<270				(2.8)	2.70
07		5.9	255					2.95
08		9.6	230		111	2.55		3.30
09	---	11.3	230		109	3.15		3.20
10	---	12.5	230		109	3.50		3.05
11	---	12.7	220		109	(3.75)		2.90
12	---	12.8	225		109	(3.85)	4.0	2.80
13	---	12.7	<230	---	109	(3.80)	3.9	2.75
14	---	12.3	225	---	109	(3.60)	3.8	2.70
15		11.8	230		109	3.35	3.4	2.65
16		11.7	235		111	2.95		2.75
17		11.0	235		119	2.15		2.85
18		9.6	215				2.0	2.85
19		8.5	220				2.2	2.90
20		7.0	225				2.6	2.95
21		6.0	230				3.1	3.05
22		4.8	<240				(2.4)	2.95
23		4.4	250				(2.7)	2.85

Time: 105.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 20

Okinawa I. (26.3°N, 127.8°E) January 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		(9.0)	240					(2.75)
01		8.1	260					2.75
02		7.2	250					2.95
03		6.5	250					2.80
04		5.7	230					2.95
05		4.7	260					2.70
06		4.1	<270					2.70
07		5.5	290					2.70
08		10.0	250		121	(2.35)		3.10
09	---	12.6	240		111	3.10		3.10
10	(250)	13.7	235		111	3.55		3.00
11	---	13.2	235		111	3.80	4.0	2.90
12	---	13.3	220		109	(3.90)	4.4	2.65
13	(380)	13.5	230	---	111	(3.90)	4.6	2.65
14	360	13.8	230	---	111	(3.85)	4.5	2.60
15	360	14.2	235	---	111	3.60	4.1	2.60
16	---	14.6	240		111	3.30	3.5	2.65
17		14.4	250		117	(2.70)	3.0	2.70
18		14.0	240		---	----	(2.6)	2.75
19		13.2	225					2.75
20		13.4	250					2.70
21		(13.2)	230					2.85
22		(12.7)	230					(2.85)
23		(11.0)	230					(2.80)

Time: 135.0°E.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 21

Maui, Hawaii (20.8°N, 156.5°W) January 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		6.6	240					2.85
01		6.1	255					2.90
02		6.0	240					3.15
03		5.8	230					3.20
04		4.2	240					2.80
05		4.0	285					2.70
06		4.0	270					2.80
07		5.7	295		167	1.70		2.80
08		10.1	250		119	2.50		3.05
09	(260)	13.0	245		111	3.20		3.10
10	(270)	13.5	235		109	3.60		3.00
11	(270)	12.9	230		109	3.80		2.85
12	350	13.0	225	7.2	109	3.90	4.0	2.70
13	375	13.7	230	7.0	109	3.90	4.4	2.65
14	375	13.6	240	6.8	109	3.70	4.2	2.65
15	365	13.5	240	6.6	111	3.60	4.1	2.65
16	(335)	13.5	240	---	<115	3.30	3.6	2.70
17	---	13.0	250		119	2.80	3.2	2.80
18		12.5	245		---	----	(2.7)	2.90
19		11.0	220				(3.0)	2.90
20		10.0	240				(2.6)	2.85
21		10.5	250				(3.2)	3.00
22		10.4	225				(2.0)	3.10
23		8.4	225					2.95

Time: 150.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 22

Puerto Rico, W. I. (18.5°N, 67.2°W) January 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		6.8	245				(2.3)	2.90
01		6.5	250				(2.4)	2.95
02		6.0	240					3.00
03		5.0	240					3.00
04		4.4	250					2.60
05		4.4	280				(3.4)	2.70
06		4.4	260					2.80
07		6.3	260		---	----		3.00
08		10.1	240		115	2.55		3.20
09	(250)	12.5	240		111	3.25		3.10
10	250	12.8	230		109	3.65		3.05
11	(260)	12.3	220	---	109	3.90	4.1	2.90
12	---	11.4	220	7.4	109	(4.00)	4.3	2.75
13	---	11.4	220	6.8	109	(4.00)	4.1	2.65
14	---	11.3	225	6.9	111	(3.90)	4.1	2.65
15	(365)	11.2	230	6.6	113	3.75	3.8	2.60
16	---	11.0	235	6.0	115	3.40	3.5	2.60
17		11.2	250		117	2.90	3.2	2.65
18		10.8	250		---	----	2.5	2.75
19		9.7	235				(3.0)	2.80
20		9.0	245				(2.5)	2.75
21		8.8	260				(3.2)	2.80
22		8.6	240				(2.6)	2.85
23		7.8	240					2.90

Time: 60.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 23

Reykjavik, Iceland (64.1°N, 21.8°W) December 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		---					3.6	----
01		---					3.6	----
02		---					3.8	----
03		---					3.5	----
04		---					3.5	----
05		---					2.8	----
06		---						----
07		(4.9)						(2.70)
08		4.6						2.75
09		5.8						2.80
10		8.0						3.00
11		10.2						3.00
12		12.0						3.00
13		(13.0)						(3.00)
14		12.6						(3.10)
15		(11.1)						(3.10)
16		(9.0)						(3.00)
17		(5.4)						(3.00)
18		(4.3)					2.4	(2.80)
19		(4.8)					3.5	(2.70)
20		---					3.6	----
21		---					3.7	----
22		(3.8)					3.5	(2.60)
23		---					3.5	----

Time: 15.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 16.2 seconds.

Table 24

Reykjavik, Iceland (64.1°N, 21.8°W) November 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		---					3.6	----
01		(6.8)					3.6	(2.65)
02		(5.1)					4.0	----
03		---					3.5	----
04		---					2.8	----
05		(5.4)					2.8	(2.70)
06		5.3						2.65
07		4.9						2.65
08		5.6			---	---		2.80
09		7.0			---	---		3.00
10		9.1			---	---		3.00
11		11.0			---	---		3.00
12		12.0			---	---		2.95
13		12.0			---	---		2.95
14		11.9			---	---		3.00
15		11.0			---	---		2.95
16		9.3						2.90
17		(9.3)						(3.00)
18		(4.6)					3.4	(2.80)
19		(4.6)					3.8	(2.80)
20		(4.5)					3.7	(2.60)
21		(4.6)					4.0	(2.60)
22		(4.7)					4.2	(2.60)
23		---					4.5	----

Time: 15.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 16.2 seconds.

Table 25

Baguio, P. I. (16.4°N, 120.6°E) November 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	230	12.4					1.5	3.00
01	230	11.3					1.9	3.05
02	220	9.8					2.3	3.05
03	220	7.9					1.5	2.90
04	240	7.0					2.0	2.80
05	240	6.8					1.6	2.90
06	280	8.2					1.6	2.85
07	250	11.8			117	(2.6)	2.8	2.95
08	240	14.5			111	(3.2)	4.1	2.90
09	230	15.6	230	---	109	(3.7)	4.6	2.80
10	---	15.6	225	---	109	3.9	3.8	2.50
11	---	15.2	220	---	109	4.0		2.30
12	---	14.0	225	---	109	(4.0)		2.30
13	---	14.0	220	---	109	4.0		2.25
14	---	14.0	230	---	109	(3.8)	4.6	2.30
15	---	14.1	235	---	109	3.4	4.3	2.30
16	250	14.2	250	---	113	(2.9)	4.2	2.30
17	270	14.2			---	2.0	4.3	2.30
18	320	13.5					3.5	2.35
19	350	13.4					2.0	2.35
20	310	13.3					2.1	2.50
21	260	13.3					2.6	2.70
22	230	13.4					1.9	2.85
23	230	13.0					2.0	2.90

Time: 120.0°E.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 26

Kiruna, Sweden (67.8°N, 20.3°E) October 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	335	6.0					4.0	2.6
01	340	6.0					4.0	2.7
02	325	5.5					3.0	2.6
03	325	6.0					3.0	(2.65)
04	305	5.8					3.0	2.6
05	280	5.2			---	---	3.0	2.8
06	265	5.3			---	E	3.0	2.8
07	255	6.0	---	---	---	E	<3.0	2.9
08	250	7.4	---	---	110	2.1	3.0	2.9
09	245	9.0	240	---	---	2.3	4.1	2.9
10	245	10.2	250	---	---	2.5	3.2	2.9
11	240	11.1	250	---	---	2.6	3.2	2.9
12	240	11.6	240	---	110	2.6	3.1	2.8
13	240	11.3	250	---	110	2.5	3.0	2.9
14	240	11.4	---	---	110	2.3	2.0	2.9
15	240	10.1			120	2.0	<3.0	2.9
16	240	9.0			---	1.4	3.5	2.95
17	250	7.5			---	E	3.2	2.9
18	250	6.8			---	---	3.5	2.9
19	265	(6.0)					3.9	2.9
20	295	(6.0)					4.0	3.0
21	340	6.0					4.5	2.75
22	305	(6.0)					4.0	2.75
23	340	6.2					4.0	2.6

Time: 15.0°E.
Sweep: 0.8 Mc to 14.0 Mc in 30 seconds.

Table 27

Baker Lake, Canada (64.3°N, 96.0°W) October 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		6.1					4.8	(2.8)
01		5.9			---	---	4.2	---
02		5.3			---	---	4.8	---
03		5.0			---	---	4.0	---
04		4.7			---	---	4.0	---
05		4.4			---	---	3.3	
06		4.9			115	1.7	2.2	---
07		5.0			110	2.1		---
08		6.2		---	110	2.3		(2.75)
09		7.0		3.7	110	2.6		3.0
10		7.2		3.9	110	2.9		2.8
11		7.8		---	110	3.0		2.85
12		9.0		4.2	110	3.0		2.75
13		10.0		---	110	3.0		2.75
14		10.0		---	110	2.8		2.85
15		9.1		---	110	2.5		2.9
16		8.0			115	2.3		(2.9)
17		7.6			130	2.1		(2.8)
18		7.0			130	2.0	3.0	---
19		6.4			125	1.7	4.0	---
20		6.4			---	---	6.8	---
21		6.3			---	---	5.0	(2.8)
22		6.0			---	---	5.5	(2.8)
23		5.8					5.0	---

Time: 90.0°W.
Sweep: 1.0 Mc to 16.0 Mc in 16 seconds.

Table 28

Oe Bilt, Holland (52.1°N, 5.2°E) October 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	6.0						2.6
01	300	5.8						2.7
02	290	5.5						2.7
03	285	5.3						2.7
04	270	4.9						2.75
05	255	4.6						2.7
06	245	5.8			---	E		3.0
07	220	8.8	---	---	120	2.3		3.1
08	220	>11.0	---	---	110	2.8		3.1
09	210	>11.0	---	---	105	3.0	3.2	3.0
10	220	>11.0	210	---	105	3.2	3.4	2.9
11	220	>11.0	230	---	105	3.3		(2.9)
12	210	>11.0	220	---	105	3.4		(2.8)
13	220	>11.0	---	---	110	3.3		(2.9)
14	230	>11.0	---	---	110	3.0		(2.9)
15	230	>11.0	---	---	110	2.8		(3.0)
16	220	>11.0			120	2.2		(2.95)
17	220	>11.0			---	E		3.0
18	220	>9.5						3.0
19	220	8.5						2.9
20	230	7.3						2.9
21	260	6.9						2.7
22	270	6.5						2.7
23	280	6.0						2.7

Time: 0.0°.
Sweep: 1.4 Mc to 16.0 Mc in 40 seconds.

Table 29

Schwarzenburg, Switzerland (46.8°N, 7.3°E) October 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	6.6						2.9
01	280	6.2						2.8
02	290	6.4						2.9
03	280	5.8						2.8
04	280	5.6						2.9
05	250	5.6						3.05
06	240	5.0						3.0
07	230	7.0	---	---	130	1.9		3.4
08	220	9.3	220	2.4	100	2.4		3.5
09	220	10.9	---	---	100	2.9		3.4
10	220	13.4	---	---	100	3.2		3.4
11	210	13.4	---	---	100	3.3		3.2
12	220	13.6	190	4.0	100	3.3		3.2
13	220	13.4	---	---	100	3.3		3.2
14	220	13.3	---	---	100	3.3		3.1
15	230	13.3	---	---	100	3.0		3.1
16	230	12.5			100	2.7		3.3
17	230	9.5			100	2.4		(3.3)
18	220	9.0			---	---	3.2	(3.3)
19	220	8.9						3.3
20	230	8.0						3.2
21	240	7.2						3.2
22	260	6.7						3.0
23	270	6.2						3.0

Time: 15.0°E.
Sweep: 1.0 Mc to 25.0 Mc in 30 seconds.

Table 30

Johannesburg, Union of S. Africa (26.2°S, 28.1°E) October 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	250	7.5						2.8
01	260	6.8						2.8
02	250	6.0						2.8
03	260	5.6						2.75
04	<270	5.4						2.75
05	280	5.3						2.7
06	250	7.9			120	2.1		3.0
07	240	10.5	240	---	110	2.9		3.1
08	250	11.8	230	---	110	3.4		2.9
09	250	12.1	220	---	110	3.7		2.9
10	250	12.7	220	---	110	4.0		2.7
11	260	12.9	210	---	110	4.0		2.7
12	(280)	13.0	220	---	110	4.1		2.6
13	(250)	12.9	220	---	110	4.1		2.6
14	---	12.7	220	---	110	4.0		2.6
15	---	12.6	230	---	110	3.8	3.9	2.6
16	---	12.4	240	---	110	3.4	3.9	2.6
17	(270)	12.2	250	---	120	2.8	3.6	2.7
18	260	12.1			120	---	2.8	2.8
19	250	11.5					1.8	2.8
20	250	10.9						2.8
21	250	10.1						2.8
22	250	9.0						2.9
23	250	8.4						2.9

Time: 30.0°E.
Sweep: 1.0 Mc to 15.0 Mc in 7 seconds.

Table 31

Capetown, Union of S. Africa (34.2°S, 18.3°E) October 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	<260	6.6						2.8
01	<270	6.3						2.7
02	<270	5.9						2.7
03	<270	5.6						2.6
04	<280	5.4						2.6
05	<280	5.1						2.6
06	280	6.2			---	1.8		2.8
07	240	8.9	---	---	120	2.4		3.0
08	250	11.0	240	---	110	3.1		2.9
09	250	11.9	240	---	110	3.5		2.8
10	250	12.7	230	---	110	3.8		2.7
11	(280)	13.0	230	5.7	110	---		2.6
12	(340)	13.2	230	---	110	---		2.6
13	300	13.3	220	---	110	---		2.6
14	(320)	13.1	230	---	110	---		2.5
15	(360)	>13.0	240	---	110	3.9		2.5
16	---	12.8	240	---	110	3.6		2.5
17	---	12.6	250	---	120	3.2		2.6
18	260	12.4	250	---	120	2.6		2.7
19	250	12.0			---	---	2.0	2.8
20	240	11.0						2.8
21	240	9.4						2.8
22	250	8.6						2.8
23	250	7.6						2.8

Time: 30.0°E.
Sweep: 1.0 Mc to 15.0 Mc in 7 seconds.

Table 32

Buenos Aires, Argentina (34.5°S, 58.5°W) October 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	13.6						2.85
01	280	13.2						2.9
02	280	12.2						2.9
03	260	11.4						2.9
04	260	9.6						2.7
05	280	8.6						2.7
06	220	10.1						2.9
07	230	11.4	---	---				2.95
08	250	12.1	220	---				3.0
09	280	13.0	220	---				2.8
10	300	13.8	220	---				2.8
11	320	14.5	230	---				2.7
12	350	15.2	230	---				2.7
13	360	15.0	220	---				2.7
14	360	15.2	220	---				2.7
15	350	15.2	230	---				2.7
16	320	15.0	230	---				2.7
17	300	15.0	250	---				2.8
18	290	15.2	---	---				2.9
19	290	15.3						2.9
20	290	(14.8)						(2.8)
21	300	(13.6)						(2.8)
22	300	(14.2)						(2.85)
23	300	13.9						2.8

Time: 60.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 27 seconds.

Table 33

Oecepcion I. (63.0°S, 60.7°W) October 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	8.1						2.9
01	320	7.9						2.9
02	320	7.3						2.9
03	320	6.7						2.9
04	310	6.9						2.9
05	320	7.1						2.9
06	290	7.4						3.1
07	250	8.3						3.3
08	230	8.8						3.5
09	230	10.3						3.4
10	230	10.9					3.4	3.5
11	220	11.4					3.5	3.4
12	220	11.8					3.3	3.4
13	220	12.0						3.4
14	220	11.7					3.4	3.4
15	220	11.8					3.4	3.4
16	230	10.9					3.4	3.4
17	230	10.0						3.5
18	230	9.7						3.4
19	230	9.7						3.4
20	250	9.8						3.4
21	260	9.6						3.3
22	270	9.2						3.2
23	290	8.6						3.1

Time: 60.0°W.
Sweep: 1.5 Mc to 16.0 Mc in 15 minutes, manual operation.

Table 34

Churchill, Canada (58.8°N, 94.2°W) September 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		5.4			---	1.8	5.0	---
01		4.9			---	---	5.0	(2.8)
02		4.8			---	2.3	5.0	---
03		4.1			135	1.9	4.8	---
04		4.0			120	1.9	4.8	---
05		4.3			130	2.2	4.0	(2.8)
06		5.0			120	2.6	3.7	(3.1)
07		5.6		3.9	120	2.8	2.8	3.1
08		6.2		4.5	110	3.1		2.95
09		6.5		4.8	110	3.2		2.85
10		7.0		5.0	110	3.4		2.8
11		7.6		5.0	110	3.5		2.8
12		7.9		5.0	110	3.5		2.75
13		8.2		5.0	110	3.5		2.7
14		8.2		5.0	110	3.4		2.7
15		8.5		4.8	110	3.2		2.8
16		8.5		4.5	110	3.0		2.7
17		8.0		4.2	120	2.8		2.8
18		7.0			130	2.5		2.8
19		6.4			120	2.2	<3.0	2.8
20		5.8			120	2.3	4.5	2.9
21		5.4			120	2.3	5.0	(2.9)
22		5.5			130	2.0	6.0	(2.7)
23		5.4			---	1.6	5.5	(3.1)

Time: 90.0°W.
Sweep: 1.0 Mc to 16.0 Mc in 16 seconds.

Table 35

Townsville, Australia (19.3°S, 146.7°E) August 1956

Time	h'F2	foF2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00		>6.0	245					3.15
01		6.0	240					3.1
02		5.0	230				2.0	3.2
03		3.9	<230				2.1	3.0
04		3.6	265				2.0	2.8
05		3.7	285				2.0	2.9
06		3.7	260				2.1	3.0
07		7.2	245			2.2		3.4
08	(240)	>9.5	230	---		3.0	3.6	3.4
09	250	11.2	225	---		3.4	3.7	3.3
10	250	11.9	215	5.2		3.6	5.4	3.3
11	260	11.0	200	5.3		3.7	6.0	3.2
12	275	11.0	200	5.3		3.8	4.6	3.0
13	275	10.6	200	5.5		3.7	5.5	3.0
14	(290)	10.7	200	---		3.7	4.4	3.0
15	---	10.2	215	5.4		3.5	4.4	2.9
16	---	>10.0	225	---		3.2	4.0	3.0
17	---	>9.5	250			2.7	3.5	(3.0)
18		>9.5	250			1.8	3.5	(3.1)
19		>7.5	240				3.0	---
20		>7.0	230				2.1	(3.05)
21		7.0	260				2.1	(2.95)
22		>6.8	250				1.8	(3.0)
23		>6.8	250					(3.0)

Time: 150.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 1 minute 55 seconds.

Table 36

Brisbane, Australia (27.5°S, 153.0°E) August 1956

Time	h'F2	foF2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00		6.0	260					2.8
01		5.5	270					2.8
02		5.1	260					2.8
03		5.1	250					2.75
04		4.6	270					2.65
05		4.6	260					2.7
06		5.1	260			---		2.8
07		8.5	240			>2.3		3.2
08		10.0	240			3.0		3.1
09		11.0	230			3.4		3.0
10	---	11.8	220	---		<3.8		3.0
11	---	11.4	220	---		3.8	4.1	3.0
12	(270)	11.0	220	5.1		(3.8)	4.2	2.8
13	(280)	10.7	210	4.9		(3.8)	4.1	2.8
14	---	10.6	220	---		(3.7)	4.3	2.8
15	---	10.0	230	---		(3.4)	4.0	2.8
16		9.8	240			2.9		2.8
17		9.2	250			E		2.9
18		8.5	240					2.9
19		8.0	240					2.8
20		7.2	250					2.8
21		6.6	250					2.7
22		6.4	260					2.7
23		6.0	265					2.8

Time: 150.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 1 minute 55 seconds.

Table 37

Canberra, Australia (35.3°S, 149.0°E) August 1956

Time	h'F2	foF2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00		(5.0)	---					(2.8)
01		(4.7)	---				2.1	(2.75)
02		(4.6)	---				3.0	(2.8)
03		4.6	---				1.4	2.9
04		(4.6)	---					(2.85)
05		(4.2)	---					2.7
06		(3.9)	---					(2.8)
07		7.0	240			2.0	2.0	3.2
08	---	8.6	230			2.7		3.3
09	250	10.1	230	---		3.1		3.2
10	250	11.0	220	---		3.5		3.2
11	250	11.2	220	(5.0)		3.6		3.0
12	250	11.8	210	(5.0)		3.7		3.0
13	260	11.4	210	(5.0)		3.6		3.0
14	260	11.1	210	4.8		3.6		2.9
15	250	10.3	220	---		3.3		2.9
16	(240)	9.3	230			2.8		3.0
17	---	9.0	230			2.2		3.0
18		8.8	230					3.0
19		7.6	(225)					2.9
20		6.7	(240)					(3.0)
21		(6.8)	---					(2.9)
22		(5.9)	---					(2.8)
23		(4.9)	---					(2.8)

Time: 150.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 1 minute 55 seconds.

Table 38

Hobart, Tasmania (42.9°S, 147.2°E) August 1956

Time	h'F2	foF2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00		4.2	300					2.6
01		4.0	300					2.6
02		3.9	300					2.6
03		3.8	300					2.65
04		3.6	270					2.7
05		3.2	260					2.7
06		3.0	290					2.7
07		5.0	250			<2.0		3.0
08		8.0	240			2.4		3.2
09		9.5	240			2.9		3.2
10		10.2	230			3.2		3.1
11		10.6	230			3.4		3.1
12		10.5	230			3.5		3.1
13		10.8	220			3.4		3.0
14		10.6	220			3.3		3.0
15		10.4	230			3.0		3.1
16		10.3	240			2.6		3.1
17		9.7	230			2.0		3.0
18		9.0	230					3.0
19		7.4	240					2.9
20		6.6	250					2.8
21		6.0	260					2.7
22		5.3	270					2.7
23		4.5	280					2.7

Time: 150.0°E.
Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 39*

Inverness, Scotland (57.4°N, 4.2°W) July 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	305	6.3					2.5	2.5
01	305	6.0					2.7	2.5
02	305	5.8					2.6	2.5
03	305	5.4	---	---	(140)	(1.4)	2.7	2.5
04	300	5.5	(285)	(2.9)	120	1.7	2.6	2.6
05	320	5.4	255	3.6	115	2.1	3.0	2.7
06	390	5.9	240	4.2	110	2.6	3.4	2.7
07	405	5.9	235	4.4	110	2.9	3.6	2.7
08	410	6.2	230	4.7	105	3.1	4.6	2.8
09	390	6.5	225	4.9	100	3.4	4.8	2.8
10	375	6.7	230	5.1	100	3.5	5.0	2.8
11	380	6.7	215	5.2	100	3.7	4.7	2.8
12	390	6.7	215	5.2	100	3.8	4.7	2.8
13	405	6.6	215	5.2	100	3.7	4.5	2.8
14	410	6.7	215	5.2	100	3.6	4.6	2.7
15	395	6.6	220	5.2	100	3.6		2.7
16	380	6.8	225	5.0	105	3.4		2.7
17	350	6.9	240	4.8	110	3.2		2.8
18	325	7.0	240	4.4	110	2.9	4.3	2.8
19	300	7.0	245	4.0	115	2.4	3.7	2.8
20	265	7.0	260	---	135	2.0	2.6	2.8
21	270	7.0			---	1.7		2.8
22	275	6.8			---	---	2.4	2.6
23	285	6.7					2.4	2.5

Time: 0.0°.
Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 40*

Singapore, British Malaya (1.3°N, 103.8°E) July 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	235	10.2					3.8	3.1
01	225	8.6					3.4	3.1
02	230	6.8					3.2	3.1
03	240	5.7					3.5	3.0
04	240	4.7					3.4	3.0
05	240	3.7					2.9	3.0
06	280	5.1				(1.4)	3.4	2.8
07	250	8.9			120	2.5	3.4	2.9
08	(275)	11.8	240		110	3.2	4.2	2.9
09	(300)	12.7	225		105	3.5	4.9	2.8
10	(310)	13.0	215		105	3.9	5.0	2.5
11	(320)	12.8	205		105	4.0	4.5	2.2
12	(350)	>12.2	205	(5.3)	105	4.0		2.1
13	(335)	11.6	200		105	4.0		2.0
14	(320)	11.3	205		105	3.9		2.0
15	(280)	11.2	205		110	3.7		2.0
16	(245)	11.2	215		110	3.4	4.2	2.1
17	250	>11.4	220		115	2.8	3.9	2.2
18	270	11.5			(145)	2.0	3.5	2.4
19	295	>11.7					3.7	2.5
20	305	>11.6					3.2	(2.7)
21	250	>11.6					3.3	(2.8)
22	225	>11.4					3.9	(2.8)
23	230	10.9					4.1	2.9

Time: 105.0°E.
Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 41

Townsville, Australia (19.3°S, 146.7°E) July 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	230	>4.0						(3.1)
01	250	3.8						(3.0)
02	250	4.2						3.25
03	230	4.1						3.35
04	225	3.3					2.1	(2.9)
05	250	(3.4)					2.1	(3.0)
06	250	3.6					2.1	3.1
07	240	>6.3				2.0	2.1	3.3
08	235	(9.0)	---	---		2.6	3.7	(3.35)
09	250	10.0	225	---		3.1	3.7	3.3
10	250	11.0	210	(5.0)		3.4	4.0	3.3
11	250	10.1	200	5.1		3.5	4.2	3.2
12	265	9.5	200	5.3		3.6	4.2	3.2
13	270	9.8	205	5.2		3.6	4.1	3.1
14	280	10.0	200	5.0		3.5	4.9	3.0
15	(270)	9.5	205	---		3.4	4.4	3.1
16	(260)	9.3	220	---		3.0	3.9	3.0
17	240	9.0	---	---		2.4	3.4	3.1
18	230	(8.7)				---	2.4	---
19	215	6.8					2.3	3.15
20	240	6.0						(2.95)
21	250	(5.8)					2.0	(2.95)
22	250	(5.4)						(3.1)
23	245	4.6						(3.1)

Time: 150.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 1 minute 55 seconds.

Table 42

Brisbane, Australia (27.5°S, 153.0°E) July 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	260	4.4						2.8
01	280	4.4						2.8
02	270	4.5					<2.2	2.8
03	260	4.5						(2.9)
04	250	4.2						2.85
05	260	4.0						2.9
06	250	4.1				---		3.0
07	230	6.8				---		3.3
08	235	9.0				2.6	4.0	3.3
09	230	10.0	240	---		3.0	3.2	3.3
10	250	10.0	225	4.6		3.4	4.0	3.25
11	250	9.6	220	4.6		3.5	4.2	3.2
12	260	9.5	210	4.8		3.5	4.6	3.1
13	275	9.9	210	4.8		3.5	4.8	3.0
14	260	9.5	220	4.6		3.4	4.4	3.0
15	240	9.0	215	4.0		3.1	4.6	3.0
16	250	9.0	225	---		(2.6)	4.0	3.1
17	240	8.5				---	3.0	3.1
18	230	7.0				---	3.0	3.0
19	240	5.7					2.7	2.9
20	250	5.2					<2.2	2.9
21	260	5.0						2.8
22	250	4.7					<2.2	2.9
23	260	4.5						2.8

Time: 150.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 1 minute 55 seconds.

Table 43

Canberra, Australia (35.3°S, 149.0°E) July 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	---	3.9					2.5	(2.9)
01	---	(4.0)					2.6	(2.8)
02	---	4.0					3.1	2.8
03	---	4.1					3.2	2.9
04	<250	4.2					3.1	3.0
05	---	(4.0)					3.1	3.0
06	---	(3.6)					3.0	3.0
07	240	(4.8)				---		(3.2)
08	225	7.3				2.3		3.4
09	240	8.4	230	---		2.8		3.5
10	240	8.5	220	---		3.2		3.4
11	250	(8.5)	210	(4.6)		3.4		(3.35)
12	250	(8.5)	210	(4.8)		3.5	3.6	(3.4)
13	250	8.5	210	(4.7)		3.4	3.7	3.4
14	240	8.6	210	(4.5)		3.2		3.3
15	250	8.5	225	---		3.0		3.3
16	240	8.5	240	---		2.6	3.2	3.3
17	230	8.0				(1.8)	2.6	3.2
18	210	7.1					3.0	3.1
19	(220)	6.5					3.0	3.1
20	---	(5.0)					3.0	3.0
21	---	4.5					2.4	2.9
22	---	(4.2)					2.1	(2.8)
23	---	4.2					2.3	(2.9)

Time: 150.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 1 minute 55 seconds.

Table 44

Hobart, Tasmania (42.9°S, 147.2°E) July 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	3.0						2.7
01	300	3.0						2.7
02	300	3.0						2.7
03	300	3.0						2.7
04	290	3.0						2.8
05	270	2.8						2.8
06	270	2.5						2.85
07	270	2.8						2.8
08	230	5.8				2.0		3.2
09	230	8.0				2.4		3.3
10	230	8.7				2.8		3.2
11	230	9.7				3.0		3.2
12	230	10.0				3.1		3.2
13	230	10.5				3.1		3.15
14	230	10.2				3.0		3.1
15	240	10.0				2.7		3.1
16	240	10.0				2.2		3.1
17	230	8.6				1.7		3.1
18	240	7.0						3.0
19	240	6.0						3.0
20	250	4.5						2.9
21	250	3.9						2.95
22	270	3.5						2.8
23	300	3.3						2.7

Time: 150.0°E.
Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 45*

Inverness, Scotland (57.4°N, 4.2°W) June 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	305	6.2					2.6	2.5
01	310	5.7					2.0	2.4
02	315	5.6			(135)	(1.1)	2.4	2.5
03	320	5.4	---	---	(135)	(1.5)	2.5	2.5
04	320	5.6	285	(3.0)	135	1.8	2.9	2.5
05	390	5.9	250	3.7	115	2.2	2.9	2.6
06	405	5.8	240	4.1	110	2.6	2.9	2.7
07	430	6.1	230	4.5	105	2.9		2.7
08	400	6.4	225	4.8	100	3.2		2.7
09	390	6.8	225	4.9	100	3.4		2.7
10	395	6.9	215	5.0	100	3.5		2.8
11	390	6.9	215	5.1	100	3.6		2.8
12	420	6.8	215	5.3	100	3.7	4.2	2.7
13	415	6.6	215	5.1	100	3.6		2.7
14	405	6.8	215	5.2	100	3.5		2.7
15	420	6.6	220	5.1	105	3.5		2.6
16	385	7.0	225	4.9	105	3.4		2.7
17	365	7.0	235	4.8	110	3.2		2.8
18	330	7.2	245	4.3	110	2.9		2.8
19	300	7.1	250	(4.0)	115	2.5	3.6	2.8
20	265	7.1	---	---	135	2.1	2.7	2.8
21	270	6.9			(140)	1.7	2.5	2.8
22	285	7.0			---	---		2.6
23	295	6.4						2.5

Time: 0.0°.
Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 46*

Slough, England (51.5°N, 0.6°W) June 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	305	6.7					2.3	2.5
01	300	6.4					2.6	2.5
02	300	6.2					2.8	2.5
03	310	5.7					3.0	2.5
04	330	5.7	300	3.1	130	1.5	3.2	2.45
05	355	6.0	260	3.8	125	2.2	3.5	2.6
06	355	6.4	245	4.4	115	2.7	3.9	2.65
07	355	6.8	240	4.6	115	3.0	4.8	2.7
08	355	7.2	240	5.0	110	3.3	4.8	2.7
09	365	7.5	235	5.2	110	3.5	4.9	2.65
10	385	7.3	235	5.3	110	3.6	5.0	2.65
11	390	7.5	230	5.4	110	3.7	4.8	2.65
12	395	7.5	230	5.4	110	3.7	4.9	2.65
13	390	7.1	230	5.4	110	3.7	5.0	2.65
14	405	7.1	230	5.4	110	3.6	4.9	2.65
15	380	7.2	230	5.2	115	3.6	4.8	2.65
16	375	7.3	235	5.1	115	3.4	4.0	2.65
17	340	7.3	245	4.8	115	3.1	3.4	2.75
18	320	7.6	255	4.4	120	2.8	4.4	2.7
19	285	7.8	265	3.7	125	2.2	4.2	2.8
20	275	7.6			140	1.7	3.2	2.75
21	270	7.8					2.8	2.65
22	290	7.4					2.4	2.55
23	300	7.2					2.3	2.5

Time: 0.0°.
Sweep: 0.55 Mc to 16.5 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 47

Budapest, Hungary (47.6°N, 19.0°E) June 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	320	6.5						
01	310	6.4						
02	300	6.0						
03	280	6.0			130	1.8		
04	285	6.8			120	2.3	3.5	
05	300	7.2			115	2.9	4.2	
06	315	7.6			110	3.2	4.9	
07	355	7.9			110	3.4	5.0	
08	350	8.4			110	3.5	5.1	
09	350	8.3			110	3.5	4.9	
10	360	8.5			110	3.4	4.5	
11	380	8.4			110	3.5	4.4	
12	350	8.1			110	3.6	4.7	
13	360	7.9			110	3.5	3.6	
14	360	7.6			110	3.4	3.8	
15	330	7.7			115	3.2	3.4	
16	315	7.5			115	3.0	4.0	
17	295	7.8			120	2.6	4.0	
18	280	8.1			120	2.3	3.9	
19	275	8.0					3.3	
20	270	7.9					3.2	
21	300	7.0					2.9	
22	305	6.9						
23	310	6.8					2.2	

Time: 0.0°.
Sweep: 1.0 Mc to 20.0 Mc in 1 minute.

Table 48*

Singapore, British Malaya (1.3°N, 103.8°E) June 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	230	10.4					3.9	3.1
01	230	9.5					3.9	3.2
02	225	7.4					3.5	3.1
03	230	6.1					2.9	3.0
04	230	5.1					2.6	3.0
05	240	4.1					3.1	3.0
06	250	5.4			(140)	1.5	2.9	2.9
07	250	9.1			120	2.6	3.4	2.9
08	260	11.9	240		110	3.2	4.0	2.9
09	(300)	13.1	225		105	3.5	5.6	2.8
10	(305)	13.7	215		105	3.8	4.8	2.5
11	(315)	13.4	210		105	3.9	5.2	2.3
12	(320)	12.9	205		105	4.0		2.1
13	---	>11.8	210		105	3.9		2.1
14	---	11.8	210		105	3.8		2.1
15	---	11.7	210		105	3.6		2.2
16	---	11.8	225		105	3.2	4.1	2.2
17	245	11.7			110	2.7	4.3	2.3
18	265	11.8				1.9	3.8	2.5
19	280	12.8					4.0	2.6
20	285	13.4					2.9	2.9
21	250	>12.4					3.9	3.0
22	225	11.6					3.9	2.9
23	235	>11.2					4.2	3.0

Time: 105.0°E.
Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 49*

Falkland Is. (51.7°S, 57.8°W) June 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	340	2.8					1.6	2.5
01	340	2.9					2.9	2.5
02	335	2.9					3.0	2.5
03	345	2.8						2.5
04	330	2.9						2.6
05	290	2.9						2.7
06	255	2.7						2.9
07	260	2.8					3.1	---
08	225	5.4				(1.8)	3.1	(3.4)
09	215	6.7			(125)	2.0	4.0	(3.5)
10	220	8.0			120	2.4	3.6	3.5
11	225	8.4			120	(2.6)	4.4	(3.5)
12	225	8.5			120	(2.6)	4.7	(3.5)
13	220	7.8			120	(2.6)	4.0	3.5
14	225	7.5			(130)	2.5	3.1	(3.5)
15	225	7.3			(135)	2.0	3.1	(3.5)
16	205	5.6					3.1	(3.6)
17	220	4.0					2.8	(3.3)
18	240	3.6					3.1	3.2
19	245	3.1					2.1	(3.1)
20	260	2.8					2.2	3.0
21	285	2.6					2.6	(2.8)
22	(335)	2.6					3.0	2.5
23	(350)	2.8					3.0	(2.5)

Time: 60.0°W.
Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 50*

Port Lockroy (64.8°S, 63.5°W) June 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	345	2.3					4.0	---
01	345	2.4					4.6	---
02	355	2.4					4.6	---
03	350	2.4					(4.7)	---
04	335	2.4					5.2	---
05	310	2.3					5.0	---
06	265	2.1					5.1	---
07	265	2.2					5.2	---
08	250	(2.4)			165	(1.3)	4.6	---
09	230	(4.2)			(150)	(1.4)	5.0	---
10	225	6.2			---	(1.5)	6.0	---
11	210	(6.4)			---	(1.9)	5.4	---
12	220	6.9			(140)	2.1	5.8	---
13	215	7.0			---	1.9	5.5	---
14	215	6.3			---	1.8	5.4	---
15	220	(5.8)			160	1.5	5.0	---
16	210	4.8					4.8	---
17	225	3.9					4.7	---
18	240	2.6					(4.1)	---
19	275	2.0					3.0	---
20	310	1.9					2.6	2.6
21	340	1.9					2.6	2.5
22	330	2.1					2.6	---
23	340	2.3					2.9	---

Time: 60.0°W.
Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 51*

Inverness, Scotland (57.4°N, 4.2°W) May 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	310	5.9						2.5
01	310	5.5						2.4
02	325	4.8						2.4
03	315	4.9			(135)	(1.2)		2.5
04	305	5.0	---	---	130	1.6		2.6
05	310	5.4	260	(3.8)	130	2.0		2.8
06	330	6.0	250	4.1	115	2.4		2.8
07	375	6.2	240	4.4	110	2.8		2.8
08	380	6.5	230	4.7	105	3.1		2.8
09	385	6.8	230	4.9	105	3.3		2.7
10	370	6.8	225	5.0	105	3.5		2.8
11	400	7.0	225	5.1	105	3.6		2.7
12	385	7.1	225	5.2	105	3.7		2.7
13	395	7.2	225	5.2	105	3.6		2.7
14	390	7.2	225	5.2	105	3.5		2.7
15	385	7.2	235	5.1	105	3.5		2.7
16	370	7.4	235	4.9	105	3.3		2.7
17	330	7.6	245	4.6	110	3.0		2.8
18	295	7.5	250	(4.3)	115	2.7		2.8
19	270	7.5	---	---	125	2.2	2.8	2.8
20	265	7.1			140	1.9		2.8
21	280	6.7			---	(1.6)		2.7
22	285	6.8						2.6
23	300	6.5						2.6

Time: 0.0°.
Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 52*

Slough, England (51.5°N, 0.6°W) May 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	305	6.7					2.0	2.45
01	310	6.4					2.4	2.45
02	310	5.8					2.3	2.45
03	300	5.4					2.8	2.5
04	310	5.4	(305)	(3.2)	140	1.5	3.1	2.55
05	320	5.9	265	3.7	125	2.0	3.3	2.5
06	345	6.5	250	4.1	120	2.6	3.6	2.75
07	355	6.9	240	4.7	115	3.0	4.5	2.65
08	365	7.2	235	4.9	115	3.3	4.5	2.65
09	390	7.3	240	5.1	115	3.5	4.6	2.7
10	375	7.8	230	5.2	115	3.6	4.5	2.65
11	395	7.9	235	5.4	115	3.7	4.8	2.6
12	400	8.2	230	5.5	115	3.7	4.7	2.6
13	395	8.2	240	5.5	115	3.7	4.6	2.6
14	370	8.0	235	5.4	115	3.6	4.7	2.6
15	365	8.0	235	5.3	115	3.5	4.0	2.6
16	345	8.0	245	5.1	120	3.3	3.6	2.65
17	315	8.3	245	4.6	115	3.0	3.7	2.7
18	295	8.1	255	4.1	120	2.6	4.4	2.75
19	275	8.2	(275)	(3.7)	130	1.9	3.1	2.75
20	270	8.2					2.4	2.7
21	280	7.6					2.1	2.6
22	290	7.3						2.5
23	300	7.0						2.5

Time: 0.0°.
Sweep: 0.55 Mc to 16.5 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 53*

Singapore, British Malaya (1.3°N, 103.8°E) May 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	230	>11.6					3.3	3.0
01	225	10.2					2.9	3.1
02	230	8.6					2.7	3.0
03	235	7.2					2.4	3.0
04	240	6.4					2.6	3.1
05	235	5.4					2.5	3.2
06	280	6.3			120	(1.7)	2.9	2.9
07	250	9.9			120	2.6	3.4	2.9
08	245	12.8	245		110	3.3	3.9	2.8
09	255	13.9	230		105	3.6	4.7	2.7
10	(280)	14.3	220		105	3.9		2.4
11	285	>14.3	210		105	4.0		2.3
12	(290)	>13.9	205	(5.2)	105	4.0		2.2
13		13.8	205		105	4.0		2.1
14		13.2	210		105	3.8		2.1
15		13.2	215		105	3.6		2.1
16	(240)	13.5	235		105	3.2	4.2	2.2
17	255	>13.4			105	2.7	4.6	2.3
18	275	>13.9					3.5	(2.4)
19	300	>13.8					3.7	---
20	295	>13.8					2.8	(2.5)
21	250	>13.9					2.4	(2.8)
22	230	>12.8					3.4	2.8
23	235	>12.5					3.9	2.9

Time: 105.0°E.
Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 54*

Falkland Is. (51.7°S, 57.8°W) May 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	350	3.3					2.4	2.4
01	355	3.3					2.8	2.4
02	350	3.3					3.0	2.4
03	330	3.3					3.1	2.5
04	315	3.3					3.1	2.6
05	305	3.2						2.7
06	255	2.9					1.7	2.9
07	260	4.1			180	1.5		3.0
08	235	7.0			155	2.0	3.1	3.3
09	225	8.8			120	2.4	4.5	3.4
10	220	9.2			115	2.7	4.4	3.3
11	230	10.8			110	2.8	5.0	3.3
12	235	10.7			110	2.9	4.9	3.3
13	220	10.0			115	2.8	5.0	3.3
14	225	9.2			120	2.7	4.8	3.3
15	225	8.9			125	2.4	4.7	3.3
16	215	7.6				(1.9)	5.1	3.5
17	220	6.0					3.1	3.2
18	230	4.7					3.1	3.3
19	245	3.6					1.9	3.1
20	280	3.0						2.9
21	300	3.0					3.0	2.7
22	325	3.1					3.2	2.5
23	345	3.2					3.0	2.4

Time: 60.0°W.
Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 55*

Port Lockroy (64.8°S, 63.5°W) — May 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	380	2.6					2.6	(2.4)
01	360	2.6					4.0	(2.4)
02	380	2.5					4.0	(2.4)
03	360	2.5					3.8	(2.4)
04	360	2.4					2.4	(2.5)
05	335	2.4					4.7	(2.7)
06	300	2.3					4.1	(2.7)
07	280	2.4			(195)	(1.2)	4.2	(2.9)
08	250	4.2			165	1.4	4.1	---
09	235	5.8			145	1.7	3.9	(3.3)
10	230	8.4			125	2.0	4.6	(3.3)
11	225	9.0			130	2.2	4.6	(3.3)
12	225	9.2			130	2.2	4.1	3.2
13	225	9.3			130	2.2	>3.2	(3.3)
14	220	8.7			135	2.0	4.2	(3.3)
15	230	8.0			135	1.8	5.6	(3.3)
16	220	7.1			135	1.5	>3.2	(3.4)
17	220	5.9					4.2	3.4
18	230	4.3					4.1	3.3
19	240	3.0					4.0	(2.9)
20	285	2.5					>3.2	(2.4)
21	345	2.4					>3.2	(2.4)
22	320	2.4					2.9	(2.4)
23	385	2.4					2.2	(2.4)

Time: 60.0°W.
Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 56

Budapest, Hungary (47.6°N, 19.0°E) — April 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	310	5.9						
01	310	5.7						
02	310	5.3						
03	300	4.9						
04	300	5.3			140	2.0		
05	260	6.6			120	2.4		
06	260	7.0			115	2.9	3.0	
07	260	8.1			115	3.2	3.3	
08	270	8.8			110	3.3	3.6	
09	295	9.3			110	3.4	3.6	
10	295	10.5			110	3.5	3.8	
11	300	10.7			110	3.5		
12	295	10.6			110	3.5		
13	275	10.4			110	3.4		
14	260	9.6			110	3.3		
15	260	9.6			115	3.0		
16	250	9.1			120	2.7	3.2	
17	260	8.7			125	2.1	3.2	
18	250	8.6			---	---		
19	265	8.2						
20	280	7.2						
21	300	6.0						
22	315	5.9						
23	315	6.0						

Time: 0.0°.
Sweep: 1.0 Mc to 20.0 Mc in 1 minute.

Table 57*

Port Lockroy (64.8°S, 63.5°W) — April 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	340	4.6						2.4
01	375	4.2						2.3
02	370	4.0						2.3
03	360	3.5						2.3
04	375	3.2						2.3
05	375	3.2					1.4	2.3
06	340	3.4					2.0	2.4
07	290	4.5	(250)		130	1.3	>3.2	---
08	265	6.2	(245)		110	1.8	>3.2	3.1
09	240	7.6	(245)		110	2.2	3.4	---
10	240	10.3	(245)	(4.2)	110	2.4	3.5	---
11	245	11.2	(220)	(3.9)	110	2.6	3.3	3.1
12	240	12.1	(250)		110	2.7	3.4	---
13	235	11.4	(245)	(4.4)	105	2.7		---
14	240	11.5	(250)		105	2.6		---
15	225	(9.7)	(245)		105	2.3	3.2	---
16	230	(9.0)	(240)		110	2.1	2.9	---
17	235	(8.5)			(115)	1.7	>3.2	---
18	235	(6.6)			125		2.2	---
19	245	5.9					1.8	---
20	270	6.1					1.4	2.8
21	295	5.4						2.5
22	315	5.1						2.4
23	350	4.8						2.3

Time: 60.0°W.
Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 58

Rarotonga I. (21.3°S, 159.8°W) — March 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	(9.5)					3.0	(2.8)
01	260	(8.8)						2.9
02	270	8.6						2.8
03	260	(7.2)						2.7
04	280	7.0						2.7
05	300	(7.4)						2.7
06	290	8.4			---	E	1.8	2.9
07	250	(10.0)	250	4.0	115	2.3	3.1	3.2
08	250	11.5	240	4.5	110	3.0	3.8	3.1
09	260	12.2	230	5.0	110	3.4	4.4	2.95
10	270	12.9	230	5.4	110	3.7	4.9	2.9
11	300	14.1	220	6.0	110	3.8	5.2	2.9
12	300	14.7	220	6.2	105	4.0	4.8	2.8
13	310	14.9	220	6.4	105	4.0	4.9	2.8
14	320	14.6	230	6.5	110	3.9	4.7	2.8
15	310	14.5	240	6.0	110	3.7	4.8	2.8
16	300	14.3	250	6.0	110	3.4	3.9	2.8
17	270	13.5	250	6.3	110	2.8	3.5	2.8
18	270	13.0	---	---	115	1.8	3.3	(2.8)
19	270	(12.3)					3.5	(2.7)
20	280	(11.1)					3.6	(2.8)
21	270	(10.0)					3.2	(2.8)
22	280	(10.0)					3.5	(2.9)
23	280	(10.0)					2.9	(2.9)

Time: 157.5°W.
Sweep: 1.5 Mc to 20.0 Mc in 5 minutes, manual operation.

Table 59*

Ibadan, Nigeria (7.4°N, 4.0°E) — February 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	250	(8.0)					4.3	(2.8)
01	250	8.4					5.5	2.9
02	245	8.1					5.9	3.0
03	245	6.4					5.7	3.1
04	270	6.5					5.0	3.2
05	230	4.1					6.4	3.2
06	260	4.5	---	---	130	1.4	8.7	(3.0)
07	245	8.6	(240)	---	120	2.5	9.1	3.0
08	290	10.4	225	---	120	3.2	10.2	2.7
09	(295)	10.8	215	---	110	3.5	12.1	2.5
10	(320)	10.2	210	---	110	3.6	13.9	2.4
11	340	10.4	205	(5.0)	115	3.6	13.9	2.3
12	260	10.4	200	5.0	110	3.7	13.8	2.3
13	(360)	10.4	200	---	110	(3.7)	14.0	2.2
14	(360)	10.6	210	---	115	(3.6)	13.8	2.2
15	---	10.5	215	---	115	3.5	13.3	2.2
16	(315)	10.8	225	---	115	(3.0)	12.0	2.2
17	---	10.3	(250)	---	125	(2.4)	6.7	2.3
18	255	10.4	---	---	(170)	(1.6)	5.5	2.2
19	295	9.0						2.1
20	360	(9.4)						(2.4)
21	350	(9.8)					1.7	(2.6)
22	270	(9.4)					3.8	(2.8)
23	260	(8.8)					3.9	(2.8)

Time: 0.0°.
Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 60*

Ibadan, Nigeria (7.4°N, 4.0°E) — January 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	250	8.9					4.0	2.9
01	250	7.6					3.9	3.0
02	255	7.0					3.8	3.0
03	255	6.2					4.3	3.0
04	240	5.4					5.7	3.2
05	235	3.9					6.7	3.1
06	260	4.4	---	---	(140)	---	6.7	3.0
07	260	8.1	235	---	120	(2.3)	10.1	3.0
08	(290)	9.8	220	---	115	(3.0)	10.7	2.7
09	(310)	9.9	210	---	115	(3.3)	11.3	2.5
10	340	10.0	205	---	110	3.5	13.8	2.3
11	345	9.8	205	5.1	110	3.6	13.9	2.4
12	340	9.8	205	5.0	110	3.6	13.9	2.4
13	(340)	9.8	200	(4.9)	110	3.7	13.6	2.3
14	365	10.2	200	---	115	3.5	13.1	2.3
15	340	10.8	215	---	110	3.3	12.4	2.3
16	---	11.0	225	---	115	3.0	8.6	2.2
17	(255)	10.2	240	---	(125)	(2.3)	6.8	2.3
18	290	10.0	---	---	(165)	(1.4)	5.9	2.2
19	350	9.2					3.8	2.1
20	330	9.6					4.0	2.3
21	275	10.1					3.8	2.6
22	260	9.8					3.8	2.8
23	245	9.4					3.8	2.9

Time: 0.0°.
Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 61

Rarotonga I. (21.3°S, 159.8°W) — Oecember 1955

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	(9.4)					3.1	(3.05)
01	270	(7.7)					3.0	(3.2)
02	290	(7.0)					3.1	(3.0)
03	300	(7.5)					2.8	(3.0)
04	290	(7.4)					3.0	(2.9)
05	280	(7.3)					2.6	(3.0)
06	260	7.8			115	1.9	2.8	3.15
07	260	8.5	250	4.6	115	2.8	3.2	3.2
08	290	8.0	250	5.0	110	3.2	4.4	3.1
09	300	9.0	---	5.0	110	3.4	5.2	2.8
10	330	10.5	---	5.5	110	3.7	5.2	2.7
11	350	11.6	230	5.6	110	3.7	5.4	2.8
12	360	12.2	240	5.7	105	3.8	5.4	2.8
13	360	12.6	240	5.7	---	---	5.2	2.8
14	350	13.0	---	5.8	110	---	5.3	2.8
15	340	12.5	250	5.6	110	3.5		2.9
16	320	12.7	240	5.2	110	3.3	3.5	2.9
17	300	12.0	250	4.8	110	3.0	5.8	3.0
18	300	(10.7)	---	---	---	---	4.4	(3.0)
19	300	(9.4)					3.1	(3.0)
20	340	(9.3)					3.2	(2.8)
21	340	(8.0)					3.0	(2.85)
22	340	(7.6)					3.1	---
23	300	(7.0)					3.1	(3.0)

Time: 157.5°W.
Sweep: 1.5 Mc to 20.0 Mc in 5 minutes, manual operation.

Table 62

Poitiers, France (46.6°N, 0.3°E) — September 1955

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	260	3.9					2.3	2.85
01	290	3.9					2.3	2.80
02	<295	3.8					1.8	2.80
03	<280	3.7					1.9	2.90
04	275	3.6					1.8	2.95
05	250	3.2			---	E	2.2	3.00
06	250	4.2	235	1.9	---	E	2.3	3.35
07	255	4.8	220	3.5	110	2.3	2.5	3.40
08	280	5.3	215	4.0	105	2.6	3.0	(3.30)
09	285	5.8	210	4.2	105	2.9	3.3	3.40
10	280	6.2	210	4.5	100	3.0	3.4	3.40
11	280	6.3	205	4.6	100	3.1	3.5	3.25
12	290	6.6	210	4.6	100	3.2	3.2	3.25
13	295	6.5	205	4.6	100	3.1		3.25
14	285	6.7	210	4.5	105	3.1		3.30
15	275	6.6	220	4.2	105	2.9		3.25
16	270	6.5	225	4.0	110	2.6	2.6	(3.15)
17	255	6.4	245	3.4	110	2.1	2.5	(3.20)
18	240	6.2	---	1.9	---	E	2.3	----
19	230	5.8	---	---	---	E	2.4	(3.20)
20	230	5.6					2.4	3.25
21	235	5.1					2.5	3.10
22	250	4.3					2.3	3.00
23	260	4.0					2.0	2.90

Time: 0.0°.
Sweep: 1.6 Mc to 16.8 Mc in 1 minute.

Table 63

Casablanca, Morocco (33.6°N, 7.6°W) — September 1955

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	---	3.80						2.80
01	---	3.70						2.80
02	---	3.70						2.90
03	---	3.60						2.90
04	---	3.45						3.10
05	---	3.50						3.20
06	<230	3.40			---	----		3.30
07	230	5.20	230	2.60	130	1.90	2.5	3.45
08	250	5.95	220	4.00	105	2.50	3.2	3.50
09	255	6.40	210	4.30	105	2.80	3.5	3.50
10	270	6.80	200	4.50	100	3.15	3.5	3.40
11	275	7.05	200	4.65	100	3.20	3.2	3.35
12	290	7.20	200	4.65	100	3.25	3.4	3.20
13	300	7.55	200	(4.70)	100	3.30		3.20
14	290	8.00	210	4.60	100	3.20		3.15
15	300	7.65	225	4.60	100	3.10		3.20
16	280	8.40	230	4.40	105	2.80		3.25
17	260	8.90	235	4.00	110	2.50		3.20
18	250	8.90	245	3.40	120	1.95	2.5	3.30
19	220	8.10					2.3	3.35
20	<210	6.30					2.1	3.20
21	---	4.60					2.0	3.00
22	---	4.20						3.00
23	---	3.85						2.95

Time: 0.0°.
Sweep: 1.6 Mc to 16.0 Mc in 1 minute 15 seconds.

Table 64*

Campbell I. (52.5°S, 169.2°E) — October 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05	250	3.2	230	---	---	1.7		3.2
06	250	3.8	230	2.7	120	2.0		3.2
07	320	4.1	230	3.4	115	2.4		3.1
08	350	4.5	230	3.8	110	2.7		3.0
09	390	4.6	240	3.9	110	2.9		3.0
10	400	4.8	230	4.0	110	3.0		2.9
11	390	4.7	220	4.0	110	3.0		2.9
12	370	4.8	230	4.1	110	3.1		2.9
13	390	4.9	230	4.0	110	3.0		2.9
14	360	4.8	220	3.9	110	2.9		3.0
15	340	4.8	230	3.8	110	2.7		3.0
16	300	4.8	230	3.5	115	2.4		3.1
17	300	4.6	240	3.2	125	2.1		3.0
18	260	4.4	240	2.7	---	1.7		3.0
19	250	4.4						3.0
20	250	3.9						3.0
21	---	3.3						2.85
22	---	2.6						2.7
23	---	2.5						2.7

Time: 165.0°E.
Sweep: 1.0 Mc to 15.0 Mc in 5 minutes, manual operation.
*Observations taken on a 19-hour working schedule.

Table 65*

Campbell I. (52.5°S, 169.2°E) — March 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05	---	2.2						3.0
06	250	3.0	---	---	---	1.8		3.2
07	240	3.8	240	---	120	2.2		3.3
08	360	4.2	230	3.7	115	2.6		3.2
09	340	4.6	230	3.8	110	2.8		3.1
10	340	4.7	220	4.0	110	2.9		3.1
11	340	5.0	220	4.0	110	3.0		3.1
12	330	5.0	220	4.0	110	3.0		3.1
13	340	5.0	230	4.0	110	2.9		3.1
14	330	5.0	230	3.9	110	2.9		3.1
15	300	4.9	230	3.8	110	2.7		3.1
16	300	5.0	230	3.6	110	2.5		3.1
17	260	4.9	240	3.2	130	2.2		3.2
18	250	5.0	260	---	---	1.7		3.1
19	250	4.7						3.0
20	300	3.9						2.9
21	350	3.0						2.9
22	---	2.6						2.7
23	---	2.4						2.8

Time: 165.0°E.
Sweep: 1.0 Mc to 15.0 Mc in 5 minutes, manual operation.
*Observations taken on a 19-hour working schedule.

Table 66*

Campbell I. (52.5°S, 169.2°E) — February 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05	250	3.0	---	---	---	1.7		3.1
06	250	3.5	240	---	110	2.2		3.2
07	340	3.9	240	3.5	110	2.5		2.9
08	440	4.3	220	3.7	110	2.7		2.8
09	400	4.6	230	4.0	110	2.9		2.9
10	360	5.0	220	4.0	110	3.0		3.0
11	360	5.0	220	4.1	110	3.1		3.0
12	360	4.9	210	4.1	110	3.1		3.0
13	380	5.0	220	4.1	110	3.1		3.0
14	350	5.0	230	4.1	110	3.0		3.0
15	340	5.0	220	4.0	110	2.9		3.0
16	320	5.0	230	3.8	110	2.8		3.0
17	310	5.1	240	3.6	120	2.5		3.1
18	280	5.0	250	3.1	125	2.1		3.1
19	260	5.2	250	---	---	1.6		3.0
20	250	4.8						3.0
21	250	4.2						3.0
22	---	3.4						2.8
23	---	2.8						2.8

Time: 165.0°E.
Sweep: 1.0 Mc to 15.0 Mc in 5 minutes, manual operation.
*Observations taken on a 19-hour working schedule.

Table 67*

Campbell I. (52.5°S, 169.2°E) 5eptember 1953

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05	---	1.9			---	---		3.0
06	260	3.1	---	---	120	1.6		3.2
07	250	3.5	240	---	110	2.1		3.3
08	(270)	4.0	230	3.5	110	2.4		3.05
09	400	4.1	220	3.7	110	2.6		2.85
10	400	4.3	220	3.8	110	2.7		2.8
11	380	4.5	220	3.9	110	2.8		2.9
12	370	4.5	220	3.9	110	2.8		2.9
13	370	4.7	230	3.9	110	2.8		3.0
14	340	4.7	230	3.7	110	2.7		3.0
15	320	4.7	230	3.6	110	2.5		3.1
16	280	4.7	240	3.2	110	2.2		3.1
17	250	4.5	250	2.6	120	1.8		3.2
18	250	4.1			---	1.4		3.0
19	250	3.5						3.0
20	300	2.8						2.8
21	310	2.6						2.8
22	---	2.4						2.7
23	---	2.1						2.7

Time: 165.0°E.
Sweep: 1.0 Mc to 15.0 Mc in 5 minutes, manual operation.
*Observations taken on a 19-hour working schedule.

Table 68*

Campbell I. (52.5°S, 169.2°E) March 1953

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05	340	2.1			110	1.4		2.8
06	250	3.1			110	1.7		3.2
07	240	3.7	---	---	110	2.1		3.3
08	290	4.0	230	3.6	110	2.4		3.2
09	350	4.3	230	3.8	110	2.6		3.0
10	340	4.7	210	3.9	110	2.8		3.05
11	350	4.8	220	4.0	110	2.9		3.05
12	330	5.0	230	4.0	110	2.9		3.1
13	320	5.1	230	4.0	110	2.9		3.1
14	310	5.2	220	3.9	110	2.8		3.1
15	310	5.2	230	3.7	110	2.7		3.1
16	290	5.1	240	3.5	110	2.4		3.2
17	260	5.0	250	3.3	120	2.1		3.1
18	250	4.9	---	---	130	1.7		3.1
19	250	4.5					1.8	3.0
20	250	4.2						2.9
21	260	3.6						3.0
22								
23	350	2.7					2.7	2.8

Time: 165.0°E.
Sweep: 1.0 Mc to 15.0 Mc in 5 minutes, manual operation.
*Observations taken on an 18-hour working schedule.

Table 69*

Campbell I. (52.5°S, 169.2°E) February 1953

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05	240	3.3			120	1.7		3.2
06	240	4.1	230	---	110	2.2		3.3
07	270	4.4	230	3.8	110	2.6		3.2
08	330	4.8	210	4.0	110	2.7		3.0
09	320	5.3	210	4.1	110	2.9		3.1
10	340	5.3	210	4.1	110	3.0		3.1
11	320	5.5	200	4.2	110	3.1		3.1
12	310	5.6	200	4.2	110	3.2		3.15
13	330	5.7	210	4.2	110	3.2		3.1
14	310	5.6	220	4.2	110	3.1		3.1
15	320	5.6	220	4.1	110	3.0		3.1
16	300	5.5	220	4.0	110	2.8		3.1
17	290	5.5	240	3.5	110	2.5		3.1
18	260	5.3	250	3.1	120	2.1		3.1
19	250	5.4			130	1.7	2.6	3.0
20	250	5.9					2.6	3.0
21	250	5.3					2.5	3.0
22								
23	260	4.0					2.5	2.8

Time: 165.0°E.
Sweep: 1.0 Mc to 15.0 Mc in 5 minutes, manual operation.
*Observations taken on an 18-hour working schedule.

Table 70*

Campbell I. (52.5°S, 169.2°E) 5eptember 1952

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05	---	1.7						2.9
06	280	3.0			---	1.6		3.1
07	270	3.7	240	---	120	2.1		3.15
08	290	4.2	240	3.6	120	2.4		3.1
09	350	4.5	240	3.8	120	2.6		2.9
10	380	4.8	240	4.0	120	2.8		2.9
11	400	4.8	230	4.0	120	2.9		2.9
12	350	5.2	230	4.0	120	2.9		2.9
13	340	5.1	240	4.0	120	2.9		3.0
14	340	5.3	240	3.9	120	2.7		3.0
15	310	5.5	250	3.7	120	2.5		3.0
16	300	5.4	250	3.3	120	2.2		3.0
17	270	5.0	---	---	140	1.8		3.05
18	260	4.5						2.9
19	280	4.3						2.8
20	280	3.4						2.75
21	320	3.0						2.7
22								
23	360	2.4					2.6	---

Time: 165.0°E.
Sweep: 1.0 Mc to 15.0 Mc in 5 minutes, manual operation.
*Observations taken on an 18-hour working schedule.

Table 71*

Campbell I. (52.5°S, 169.2°E) April 1952

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05	300	3.0					1.5	2.8
06								
07	280	4.3	260	---	130	2.0		3.1
08	---	4.7	250	---	130	2.3		3.1
09	320	5.1	240	3.8	130	2.5		3.1
10	310	5.6	240	3.8	130	2.7		3.1
11	300	5.9	240	3.9	130	2.8		3.1
12	320	6.4	240	3.9	130	2.8		3.1
13	300	6.2	240	3.8	130	2.7		3.1
14	300	6.3	250	3.7	130	2.5		3.0
15	320	6.6	260	3.5	130	2.3		3.0
16	270	6.2	---	---	130	2.0		3.0
17	280	6.0			---	---	1.4	2.9
18	270	5.6						2.7
19	300	5.0						2.6
20								
21	320	5.0						2.7
22								
23	330	4.5					3.2	2.6

Time: 165.0°E.
Sweep: 1.0 Mc to 15.0 Mc in 5 minutes, manual operation.
*Observations taken on a 16-hour working schedule.

Table 72*

Campbell I. (52.5°S, 169.2°E) March 1952

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05	300	2.9						2.8
06								
07	320	4.7	250	3.6	130	2.5		3.0
08	320	5.1	250	3.7	130	2.6		3.0
09	320	5.3	240	3.9	130	2.8		3.0
10	350	5.7	240	4.1	125	3.0		3.0
11	330	5.8	240	4.1	125	3.1		3.0
12	330	6.1	240	4.1	120	3.1		3.0
13	330	6.0	240	4.1	120	3.0		3.0
14	320	6.1	240	4.0	130	2.9		3.0
15	310	6.2	250	3.8	120	2.7		3.0
16	290	6.0	250	3.7	130	2.4		2.9
17	280	6.0	280	---	130	2.0		2.9
18	280	6.2					2.0	2.8
19	270	6.2					1.9	2.8
20								
21	310	5.0					1.4	2.65
22								
23	300	4.2					2.6	2.7

Time: 165.0°E.
Sweep: 1.0 Mc to 15.0 Mc in 5 minutes, manual operation.
*Observations taken on a 16-hour working schedule.

TABLE 73

IONOSPHERIC DATA

foF2, 0.1 Mc, Mar. 1957 — 75° W Mean Time

Station Washington, D.C. Lat. 38.7°N Long. 77.1° W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Manual ☐ Automatic ☒

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01	62	62	60	61	58	54	53	76	105	117	118	128	130	127	129	130	130	124	115	98	91	88	92	F 71
02	U F 58	U F 39	B	F	U F 44	U F 30	F 30	F 37	41	40	E G 43	E G 44	53	67	71	76	82	96	106	F 63	U F 67	F	F	U F 35
03	J F 33	U F 31	U F 31	U F 34	U F 27	U F 27	U F 26	55	70	73	72	F 70	73	76	82	83	84	83	82	82	74	64	62	F 62
04	U F 68	F 68	66	U F 58	U F 54	F 48	U F 42	F 64	88	103	115	124	128	123	122	118	117	115	107	96	83	72	74	68
05	70	62	64	60	54	48	47	71	107	120	127	132	134	130	130	132	135	130	124	105	96	74	72	74
06	61	51	U F 42	F 38	F 38	41	44	70	100	107	120	127	137	135	135	131	127	127	120	112	98	87	76	69
07	68	72	71	C	C	J S 48	U F 48	74	104	118	118	129	130	131	129	126	120	120	115	105	U S 93	84	78	69
08	65	59	52	49	U S 51	54	62	84	113	107	125	135	138	140	135	130	125	122	117	103	80	74	72	69
09	70	68	57	60	U S 62	U F 62	F 58	F 82	111	122	H 132	H 130	135	135	132	130	125	120	118	110	93	84	75	69
10	66	66	68	54	U F 39	U F 44	U F 50	F 58	F 61	58	54	E G 45	E G 45	E G 45	E G 44	F 55	66	73	80	70	F 62	U F 55	54	J F 50
11	U F 49	U F 49	J F 46	J F 36	F 27	F 26	U F 34	52	59	60	66	78	96	101	103	105	106	105	97	88	F 81	F 74	F 69	U F 65
12	F 62	F 63	F 60	F 58	U F 54	U F 54	U F 60	82	103	120	127	133	134	130	129	123	H 123	122	115	98	91	88	81	74
13	70	U F 66	F 64	F 62	F 62	F 60	U F 55	82	107	125	125	133	130	125	122	124	124	117	112	105	99	93	86	81
14	79	73	70	F 66	61	F 58	F 62	96	116	131	125	130	131	130	127	I C 124	122	120	118	104	94	92	83	76
15	76	74	72	67	66	63	65	89	111	127	135	135	132	132	128	128	129	126	119	110	101	91	85	88
16	84	83	77	70	68	68	72	92	112	119	128	130	130	127	120	117	122	126	125	116	98	78	66	60
17	U S 62	U F 56	U S 54	54	52	48	55	92	116	128	135	132	132	H 126	127	125	123	118	112	107	92	88	85	78
18	70	70	65	60	61	F 56	U F 59	80	94	95	105	120	127	118	120	126	115	115	113	100	92	83	75	76
19	74	F 69	F 65	F 58	U F 47	F 43	F 46	U F 74	83	83	92	93	98	102	102	103	100	102	92	89	82	72	F 67	F 68
20	F 67	F 67	U F 64	U F 54	U F 54	F 57	U F 64	87	103	114	120	125	124	120	122	118	114	114	109	98	94	91	95	J F 78
21	U F 71	U F 72	F 74	U F 64	U F 59	U F 54	U F 56	F 80	102	115	117	122	120	125	125	122	124	122	115	104	90	86	90	U S 78
22	U S 74	60	64	62	56	52	62	83	98	102	110	111	119	120	120	125	122	117	107	97	88	76	70	72
23	70	68	62	F 58	56	F 46	F 52	78	98	108	116	122	126	123	125	123	119	116	108	J S 102	J S 92	82	J S 78	U S 76
24	J S 76	J S 72	J S 67	67	J S 57	J S 52	62	87	110	117	124	127	126	124	120	117	115	112	114	107	U S 95	86	76	F 67
25	U F 58	U F 57	J S 64	U F 63	U F 46	U F 43	F 52	F 69	92	91	100	114	112	107	103	104	104	105	104	94	83	80	77	73
26	70	68	F 66	F 62	U F 58	U F 57	F 58	80	93	100	112	112	118	122	122	119	117	113	111	102	90	88	83	76
27	70	70	69	58	U F 48	F 47	55	J S 74	85	91	106	110	112	120	112	110	105	100	100	J R 86	U F 58	U F 62	U F 42	U F 56
28	U F 41	U F 29	U F 26	J F 31	U F 40	U F 37	U F 49	67	76	88	103	112	116	120	122	114	105	105	101	90	U F 83	J S 82	U F 70	U F 75
29	F 70	F 62	F 55	F 54	F 51	F 45	50	63	72	74	78	96	91	108	100	U S 91	86	88	82	U S 94	83	U S 78	68	F 77
30	71	70	U F 57	U F 54	U F 46	U F 41	U F 42	62	78	92	107	115	115	115	114	115	110	110	109	102	90	84	80	76
31	F 74	F 63	F 62	U F 58	U F 58	F 56	60	70	76	77	79	80	83	84	88	88	86	82	86	U F 85	82	79	77	72
MED	70	66	64	58	U 54	48	55	76	98	107	116	122	126	123	122	119	117	115	111	100	90	82	76	72
NO	31	31	30	29	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	30	31

CENTRAL RADIO PROPAGATION LABORATORY, NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.

TABLE 74
IONOSPHERIC DATA

foF2, 0.1 Mc, Mar. 1957 — 75° W Meon Time

Station: Washington, D.C. Lat. 38.7°N Long. 77.1° W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Monual ☐ Automatic ☒

	0030	0130	0230	0330	0430	0530	0630	0730	0830	0930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2330
01	62	60	58	61	55	54	62	92	113	113	125	128	128	128	133	129	125	117	105	92	90	88	F 83	F 66
02	U F 31	48	B	F 33	U F 29	U F 28	U F 33	F 40	40	42	E B 43	49	57	67	73	F 76	91	112	84	U F 60	F	F	U F 33	U F 36
03	U F 36	U F 27	U F 32	U F 32	U F 25	U F 27	F 40	66	71	74	70	71	74	79	84	84	83	83	86	76	F 69	62	62	65
04	U F 70	U F 65	U F 60	U F 54	U F 52	U F 44	F 47	78	100	112	120	127	127	122	120	118	115	113	104	92	80	72	68	70
05	66	64	62	56	51	46	55	92	115	121	128	130	130	132	132	134	133	127	117	94	88	72	75	68
06	52	U F 46	40	38	40	43	57	86	107	112	125	135	135	135	132	128	125	125	116	U S 105	U S 93	82	72	68
07	U S 70	U S 70	C	C	U S 53	U S 47	U F 60	92	113	119	125	133	129	130	127	123	122	119	110	U S 95	80	82	U S 74	68
08	63	54	50	U S 48	U S 52	54	72	104	110	123	132	140	138	137	135	128	124	119	109	93	76	72	71	F 67
09	69	59	57	U S 62	U F 62	F 56	F 70	97	117	125	132	130	136	132	130	128	123	120	114	102	90	82	68	66
10	65	68	58	57	F 41	U F 47	U F 44	F 64	60	56	49	E G 45	E G 45	E G 44	F 56	F 58	F 68	78	71	68	U F 56	U F 58	U F 48	J F 49
11	U F 52	J F 49	F 39	F 28	F 27	F 28	44	F 56	59	62	71	84	99	103	103	106	104	103	92	84	80	F 71	F 67	U F 64
12	U F 60	F 64	F 59	F 56	U F 55	U F 56	70	91	112	125	130	133	133	130	127	H 122	122	120	105	90	90	85	78	73
13	U F 70	U F 66	U F 64	U F 62	U F 62	56	U S 70	94	117	123	130	130	130	124	125	125	123	113	111	101	98	89	84	82
14	74	70	F 67	62	58	F 59	78	105	127	128	130	132	128	129	123	123	120	119	114	98	94	88	78	74
15	74	75	71	66	66	62	62	102	120	127	132	133	133	130	127	130	128	122	114	96	94	89	87	88
16	84	78	79	70	68	68	80	105	120	125	130	130	128	128	117	117	127	126	117	110	90	70	60	61
17	U S 62	U S 56	54	54	52	F 49	72	103	125	129	137	133	130	127	126	126	120	115	110	98	91	90	78	80
18	72	67	61	60	F 59	F 53	F 64	92	99	96	112	126	125	123	118	116	115	117	107	94	86	78	75	74
19	72	F 64	F 64	F 54	F 44	F 41	F 64	78	86	87	91	95	102	102	101	101	102	98	95	84	76	68	F 68	F 69
20	F 65	U F 62	U F 61	U F 54	U F 58	59	74	96	107	116	122	125	120	123	120	116	113	112	104	96	89	90	U S 81	U F 76
21	U F 70	74	69	U F 62	U F 56	U F 52	69	92	107	117	120	122	122	125	125	126	124	123	112	U S 96	88	U S 86	82	84
22	66	62	62	64	54	56	72	90	101	102	112	112	120	120	125	120	121	111	107	U C 92	78	71	72	71
23	71	65	59	57	U F 52	F 45	66	92	102	110	121	127	122	125	125	119	U S 117	112	104	U S 94	88	U S 80	U S 80	U S 72
24	73	70	67	62	54	U F 54	76	100	112	120	123	128	126	122	119	115	114	112	112	U S 99	90	85	70	F 59
25	F 56	F 60	F 64	J S 59	48	F 43	F 56	76	F 89	91	109	115	109	103	105	105	106	105	U S 101	89	79	79	76	70
26	68	68	U F 66	F 62	U F 58	U F 56	F 70	87	98	105	113	115	121	122	120	119	116	112	108	97	84	87	80	74
27	69	70	63	58	U F 48	47	U S 66	U S 84	97	102	105	109	118	120	108	110	107	100	101	U S 73	58	U F 44	F 54	U F 41
28	U F 40	F 29	U F 27	U F 36	U F 40	U F 41	59	72	U C 82	94	108	114	118	122	120	109	103	102	U S 97	F 87	J S 82	U S 80	U F 74	75
29	F 68	F 60	F 55	F 52	F 47	F 46	58	68	73	77	89	90	103	107	97	87	88	88	91	94	78	69	76	F 74
30	71	F 59	U F 55	U F 46	U F 40	U F 36	F 52	69	89	99	109	113	115	116	116	113	110	U S 111	105	U S 95	86	82	F 75	74
31	F 68	F 60	F 60	U F 58	U F 57	F 55	F 66	73	75	77	79	81	84	85	88	89	84	82	F 86	88	U F 76	75	U S 75	67
MED	68	64	60	57	U 52	49	64	91	102	112	120	126	122	123	120	118	116	112	105	94	86	80	75	70
NO	31	31	29	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	30	31	31

CENTRAL RADIO PROPAGATION LABORATORY, NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.

TABLE 75

IONOSPHERIC DATA

foFI, 0.1 Mc, Mar 1957 — 75° W Mean Time

Station Washington, D.C. Lat. 38.7°N Long. 77.1° W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Manual ☐ Automatic ☒

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01											L	L	L	L	L	L	L	L						
02											430	440	450	490	L	L	L	L						
03									L	L	510	540	H 550	550	540	550	L	L						
04										L	L	L	L	L	L									
05										L	L	L	L	L	L	L								
06										L	L	L	L	L	L	L	L							
07											L	L	L	L	L	L	L							
08											L	L	L	L	L	L								
09									L	L	L	L	L	L	L	L	L	L						
10												450	450	450	440	440	440	L						
11											H 520	L	L	L	L	L	L							
12											L	L	L	L	L	L	L							
13										L	L	L	L	L	L									
14										L	L	L	L	L		C	L	L						
15											L	L	L	L	L	L								
16										L	L	L	L	L	L	L	L	L						
17									L	L	L	L	L	L	L	L	L	L						
18									L	L	L	L	L	L	L	L	L	L						
19											H 520		H 560	L	U H 640	L	L	L						
20										L	L	L	L	L	L	L	L	L						
21												L	L	L	L	L	L							
22									L	L	L	L	L	L	L									
23								L	L	L	L	L	L	L	L	L	L	L						
24									L	L	L	L		L	L	L	L							
25											L	L	L	L	L	L	L	L						
26										L	L	L	L	L	L	L	L	L						
27								L	L	L	L	L	L	L	L	L	L	L	L					
28								L	L	L	L	L	L	L	L	L								
29									L	L	L			640	630	H 660	L	L	L					
30									L	L	L	L	L	L	L									
31									H 380	H 530	H 570	H 580	580	560	580	570	560	L	L					
MED											520		550	550	580									
NO									1	1	5	4	5	5	5	4	2							

CENTRAL RADIO PROPAGATION LABORATORY, NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.

TABLE 76

IONOSPHERIC DATA

foE, 0.05 Mc, Mar. 1957 — 75° W Meon Time

Station: Washington, D.C. Lat. 38.7°N Long. 77.1° W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Manual ☐ Automatic ☒

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01								180	U R 260	H 300	310	335	340	355	H 350	330	295	220						
02								220	H 290	290	A	R	330	325	330	325	280	220						
03								200	H 260	H 300	325	340	H 345	340	H 345	H 325	285	235						
04								B	H 265	H 310	330	340	365	370	350	330	300	H 250						
05								185	I A 270	U H 315	U H 340	H 350	365	370	350	330	300	240						
06								A	265	H 310	330	U R 350	U R 360	I R 360	U R 360	330	300	225						
07								195	280	320	340	350	350	360	340	325	310	255						
08								195	H 265	H 320	H 345	360	370	370	350	345	315	245						
09								U B 190	260	320	340	370	365	370	360	340	310	250						
10								U R 220	U R 280	315	340	350	345	350	340	330	300	250						
11								210	275	300	310	I R 340	U R 360	I R 360	360	340	300	255						
12								U S 195	285	320	350	380	385	390	370	350	310	250						
13								H 190	H 275	H 320	H 350	H 370	400	370	365	350	320	260						
14								H 210	H 280	H 320	I R 330	350	360	H 380	370	I C 345	305	260						
15								H 215	I R 265	U A 305	340	360	H 360	H 370	H 370	345	320	255						
16								H 220	H 290	310	340	365	375	375	365	350	320	255	U R 180					
17								A	H 290	300	310	350	H 380	H 380	H 360	H 350	H 320	260	175					
18								H 230	H 285	H 315	350	370	380	380	370	340	320	260	165					
19								H 230	H 290	U R 330	H 340	U R 360	370	H 370	355	H 350	H 315	265	U H 190					
20								H 200	U R 280	310	H 340	H 350	370	H 375	H 360	H 345	310	265	180					
21								220	300	T A 320	350	365	370	375	360	345	315	260	B					
22								H 230	275	300	R	R	375	385	355	330	325	255	170					
23								U R 230	275	315	325	320	R	R	R	U R 355	320	R	R					
24								205	H 285	U R 300	I R 325	U R 350	U 350	R	R	U R 330	U R 310	265	190					
25							170	240	H 290	325	H 340	U R 360	H 370	365	H 365	H 350	320	265	195					
26								240	H 285	310	U R 320	U R 350	360	370	370	350	H 330	265	175					
27							R	U R 240	280	I R 310	U R 310	R	B	B	U R 370	350	325	275	A					
28								240	290	320	U R 340	R	B	U B 375	H 360	345	H 315	270	H 205					
29								H 265	310	I R 340	345	370	H 385	380	H 370	H 360	H 325	270	H 210					
30									300	U R 320	U R 350	U R 370	U B 370	I B 375	370	360	330	275	H 200					
31								H 245	H 300	H 330	R	U R 360	U B 385	H 375	U R 375	345	320	285	U H 190					
MED								220	280	315	340	350	370	370	360	345	315	260	190					
NO							1	27	31	31	28	27	28	28	29	31	31	30	13					

CENTRAL RADIO PROPAGATION LABORATORY, NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.

TABLE 77
IONOSPHERIC DATA

foEs, 0.1 Mc, Mar. 1957 — 75° W Mean Time

Station Washington, D.C. Lat. 38.7°N Long. 77.1° W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Manual ☐ Automatic ☒

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01	S	S	S	S	S	S	S	G	G	G	32	G	35	G	G	G	G	G	B	S	S	S	S	S
02	S	F 34	B	B	28	S	S	G	G	G	33	G	G	G	G	G	G	G	S	S	S	S	S	S
03	S	S	S	S	S	S	S	21	G	G	G	G	G	G	G	G	G	G	B	S	S	J 27	S	S
04	S	S	E	E	E	E	S	B	J 62	G	B	B	B	B	B	G	50	G	S	S	S	S	S	S
05	S	S	S	S	S	S	S	G	28	J 31	J 32	G	G	G	G	G	G	G	B	S	S	S	S	S
06	S	S	S	S	S	S	S	J 26	28	G	G	G	G	G	G	G	G	G	B	S	S	S	S	S
07	S	S	S	C	C	S	S	G	J 26	G	G	G	G	G	G	G	32	27	B	S	S	S	S	S
08	S	S	S	S	S	S	S	G	G	G	G	G	G	G	G	35	35	29	S	S	S	S	S	S
09	S	S	S	S	S	S	S	G	G	G	G	G	G	G	G	G	G	27	S	S	S	S	S	S
10	S	S	S	S	S	S	S	G	G	G	G	G	G	G	G	G	G	G	B	B	S	S	S	36
11	S	S	S	19	17	J 22	J S 23	22	29	G	33	G	G	G	G	G	G	29	19	S	S	S	S	S
12	S	S	S	S	S	S	S	G	G	G	G	G	G	G	G	G	G	29	B	S	S	S	S	S
13	S	S	S	S	S	S	S	G	G	G	G	G	G	G	G	37	34	28	B	S	S	S	S	S
14	S	S	S	S	S	S	S	G	G	G	G	G	G	G	G	C	G	G	S	S	S	S	S	S
15	S	S	S	S	S	S	S	G	28	32	G	G	40	G	G	G	G	G	B	S	S	S	S	S
16	S	S	S	S	S	S	S	G	G	G	33	G	G	G	G	G	G	G	G	S	S	S	S	S
17	S	S	S	S	S	S	S	22	G	32	33	H 32	G	G	G	G	G	G	19	19	S	S	S	S
18	S	S	S	S	S	S	S	G	28	32	33	G	G	G	G	G	G	G	G	S	S	S	S	S
19	S	S	S	S	S	S	S	G	G	G	G	G	G	G	G	G	G	G	G	S	S	J 23	S	S
20	S	S	S	S	S	S	S	G	29	32	33	G	G	G	G	G	G	G	G	S	S	S	S	S
21	S	S	S	S	S	S	S	G	G	33	G	G	G	G	G	G	G	G	21	S	S	S	B	B
22	S	S	S	S	S	S	B	G	29	32	33	G	G	40	37	35	G	G	G	B	S	S	S	S
23	S	S	J 34	B	S	S	S	G	G	34	34	34	G	G	G	G	G	G	G	S	S	S	S	S
24	S	S	S	S	S	S	B	G	G	G	33	G	G	G	G	G	G	G	G	S	S	S	S	S
25	S	S	S	S	S	S	J 33	G	G	G	G	G	G	G	G	G	G	G	G	S	S	S	S	S
26	S	S	S	S	S	S	B	G	G	G	G	G	G	G	38	37	G	G	G	S	S	S	S	S
27	S	S	S	S	S	S	G	G	G	G	34	G	B	B	G	G	G	G	36	S	S	U S 22	S	S
28	S	43	S	S	S	S	B	G	G	G	G	B	B	B	38	G	G	G	G	S	S	S	S	S
29	S	S	S	S	S	S	B	G	33	34	32	G	G	G	G	G	G	G	G	S	S	S	S	S
30	S	S	S	S	S	S	B	26	32	33	G	G	G	B	G	G	G	G	G	S	S	S	S	S
31	S	S	S	S	S	S	14	G	G	G	G	G	B	B	G	G	G	G	G	S	S	S	S	S
MED																								
NO		2	2	4	3	2	10	31	31	31	31	31	31	31	31	30	31	31	26	3		3	1	2

CENTRAL RADIO PROPAGATION LABORATORY, NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.

TABLE 78

IONOSPHERIC DATA

fMIN, 0.1Mc, Mar. 1957 — 75° W Mean Time

Station: Washington, D.C. Lat. 38.7°N Long. 77.1° W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Manual ☐ Automatic ☒

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	27	23	21	19	20	17	17	16	16	18	E S 16	E S 16	E S 16	E S 16	E S 16
02	E S 16	E S 16	B	U B 18	E S 16	E S 16	E S 16	E S 16	17	19	21	24	24	24	25	19	16	16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
03	E S 16	E S 16	E S 16	E S 16	E S 13	E S 13	E S 13	E S 13	16	16	17	17	19	20	25	16	18	16	18	E S 16	E S 16	E	E S 16	E S 16
04	E S 16	E S 16	E	E	E	E	E S 16	20	19	16	19	19	21	22	24	18	16	16	E S 16	E S 16	E S 16	E S 15	E S 16	E S 16
05	E S 16	E S 16	E S 13	E S 16	E S 13	E S 13	E S 16	E S 16	16	17	18	17	18	20	17	24	25	16	18	E S 16	E S 16	E S 16	E S 16	E S 16
06	E S 16	E S 16	E S 13	E S 16	E S 16	E S 16	E S 16	E S 16	17	18	18	23	24	27	27	16	17	19	17	E S 16	E S 16	E S 16	E S 16	E S 16
07	E S 16	E S 16	E S 11	C	C	E S 13	E S 14	E S 16	E S 16	19	19	18	20	23	21	18	E S 16	E S 16	18	E S 16	E S 16	E S 16	E S 16	E S 16
08	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	17	17	22	21	19	23	17	16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
09	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	20	19	21	19	22	20	25	20	17	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 18
10	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	19	E C 29	16	18	24	29	22	22	19	17	17	16	17	E S 16	E S 16	E S 16	E S 16
11	E S 16	E S 15	E S 15	E S 12	E S 11	E S 16	E S 16	E S 16	16	17	23	26	22	28	26	20	17	16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
12	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	17	16	16	17	23	22	21	21	17	17	17	21	E S 16	E S 16	E S 16	E S 16	E S 16
13	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	17	21	20	19	19	22	20	19	17	21	E S 16	E S 16	E S 16	E S 16	E S 16
14	E S 13	E S 13	E S 16	E S 15	E S 16	E S 13	E S 16	16	17	20	22	24	27	27	25	C	16	16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
15	E S 16	E S 13	E S 11	E S 13	E S 16	E S 15	E S 16	16	16	16	18	17	22	22	22	20	22	16	16	E S 16	E S 16	E S 16	E S 16	E S 16
16	E S 16	E S 16	E S 16	E S 16	E S 14	E S 16	E S 16	E S 16	E S 16	21	21	27	23	26	26	22	18	17	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
17	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 13	E S 16	17	23	26	23	23	23	20	16	17	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
18	E S 16	E S 16	E S 16	E S 14	E S 12	E S 16	E S 16	16	16	17	21	25	25	28	28	22	20	17	16	E S 16	E S 16	E S 16	E S 16	E S 16
19	E S 16	E S 16	E S 16	E S 16	E S 17	E S 17	E S 18	16	16	17	18	22	23	22	24	22	20	16	16	E S 16	E S 16	E S 16	E S 16	E S 16
20	E S 16	E S 15	E S 16	E S 14	E S 16	E S 16	E S 16	16	16	20	22	27	26	25	24	19	17	16	16	E S 16	E S 16	E S 16	E S 16	E S 16
21	E S 16	E S 16	E S 16	E S 12	E S 16	E S 16	E S 16	E S 16	E S 16	16	17	20	22	20	25	27	21	E S 16	19	E S 16	E S 16	E S 16	17	20
22	E S 17	E S 16	E S 17	E S 16	E S 17	E S 17	18	17	21	22	22	31	28	32	29	26	16	17	16	18	E S 16	E S 17	E S 17	E S 16
23	E S 16	E S 16	E S 16	17	E S 16	E S 16	E S 17	E S 17	20	24	25	32	30	27	39	30	26	18	18	E S 16	E S 17	E S 16	E S 17	E S 16
24	E S 17	E S 16	E S 16	E S 16	E S 16	E S 16	E S 17	17	18	23	22	26	40	24	44	25	17	17	17	E S 16	E S 16	E S 16	E S 16	E S 17
25	E S 16	E S 17	E S 16	E S 16	E S 16	E S 16	E S 16	16	16	18	17	18	22	22	20	16	16	16	16	E S 16	E S 16	E S 16	E S 16	E S 16
26	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	E S 16	16	20	24	25	28	30	28	23	22	16	16	E S 16	E S 16	E S 16	E S 16	E S 16
27	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	17	16	21	26	34	41	39	23	25	22	16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
28	E S 16	E S 16	E S 16	E S 16	E S 15	E S 16	17	16	17	18	24	39	41	40	28	24	16	16	16	E S 16	E S 16	E S 16	E S 16	E S 16
29	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	19	16	16	21	21	23	20	30	27	20	18	16	16	E S 16	E S 16	E S 16	E S 16	E S 16
30	E S 16	E S 16	E S 15	E S 16	E S 13	E S 15	18	16	16	18	23	25	40	40	30	24	20	16	16	E S 15	E S 16	E S 16	E S 16	E S 16
31	E S 16	E S 15	E S 16	E S 13	E S 13	E S 16	E S 13	16	18	19	25	31	40	40	30	25	18	17	16	E S 16	E S 16	E S 16	E S 16	E S 16
MED																								
NO																								

CENTRAL RADIO PROPAGATION LABORATORY, NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.

TABLE 79

IONOSPHERIC DATA

h'F2, Km, Mar. 1957 — 75° W Mean Time

Station Washington, D.C. Lat. 38.7°N Long. 77.1° W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Manual ☐ Automatic ☒

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01											L	240	250	260	L	245	245	L						
02													575	405	420	330	360	265						
03									270	300	370	400	415	420	360	L	L	L						
04										240	240	245	U L 250	L	L									
05										U L 235	U L 240	L	L	U L 240	L	L								
06										230	U L 230	U L 235	L	L	U L 240	245	240							
07											245	L	L	L	L	L	L							
08											240	L	L	L	L	L								
09									250	L	220	240	L	L	U L 240	U L 250	L	L						
10																640	540	L						
11											400	L	290	L	L	L	L							
12											U L 235	U L 240	U L 230	U L 240	U L 240	L	L							
13										U L 225	230	L	250	L	L									
14										245	235	L	L	L	L	C	L	L						
15									230	240	L	L	L	L	L	L								
16										U L 230	U L 235	L	U L 240	L	L	U L 370	L	L						
17									275	L	270	240	260	L	L	L	L	L						
18									245	240	L	L	L	L	L	L	L	L						
19											290	350	300	L	340	L	L	U L 250						
20										225	250	L		L	L	L	L	L						
21												250	U L 320	U L 350	L	L	L							
22									240	240	260	L	L	L	L	L	250	240						
23									255	245	L	250	265	250	L	250	L	250						
24									L	L	250	285	255	270	260	L	L							
25										270	L	250	260	L	L	L	L	L						
26										240	265	U L 300	L	L	L	L	L	L						
27								250	L	240	255	295	L	U H 235	L	250	255	250	L					
28								290	290	260	L	L	270	L	260	260	L							
29									L	L	L	L	L	L	L	L	L	L	L					
30									L	L	L	L	L	L	L	L	L	L						
31									280	350	400	420	430	450	450	430	400	L	L					
MED									U 255	240	250	250	260	265	U 260	255	U 255	U 250						
NO								2	9	17	20	15	16	10	9	10	7	5						

CENTRAL RADIO PROPAGATION LABORATORY, NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.

TABLE 80
IONOSPHERIC DATA

h'F, Km, Mar. 1957 — 75° W Mean Time

Station: Washington, D.C. Lat. 38.7°N Lang. 77.1° W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Manual ☐ Automatic ☒

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01	260	270	280	280	250	250	250	245	235	230	225	220	220	215	235	235	235	235	250	265	285	300	295	300
02	335	U S 640	B	F 640	450	380	415	330	275	280	280	250	230	250	250	245	280	255	245	300	320	290	330	320
03	F 300	290	F 310	F 400	U S 340	320	290	270	245	225	220	H 215	H 215	220	230	230	230	240	245	240	240	250	270	305
04	315	285	260	260	250	260	280	245	235	225	205	215	200	215	H 215	230	235	235	230	220	230	250	255	265
05	260	270	260	250	240	250	285	240	235	220	225	220	220	230	230	225	235	235	230	215	240	240	250	240
06	235	270	290	E S 310	350	310	250	245	245	220	205	210	220	220	225	230	235	245	225	230	230	235	240	260
07	290	270	260	C	C	275	300	245	240	235	230	215	215	235	230	235	240	250	240	240	230	255	245	245
08	255	255	280	315	320	280	255	230	240	220	200	215	215	225	225	235	240	240	220	230	220	260	270	275
09	300	290	310	330	280	265	250	235	230	225	215	230	230	225	230	225	230	230	235	225	220	235	245	275
10	310	325	270	E S 300	E S 370	E S 330	270	260	260	250	245	255	260	250	250	255	250	260	270	265	260	300	275	310
11	275	290	300	310	340	370	350	295	260	240	230	240	220	225	220	225	240	250	240	240	250	250	260	280
12	300	290	320	300	E S 300	E S 300	250	240	235	225	210	205	205	220	210	220	225	240	230	210	250	250	240	245
13	250	260	280	280	260	250	245	235	230	215	210	H 205	215	210	220	220	230	230	240	225	250	240	245	240
14	250	250	250	260	250	270	265	230	230	230	210	220	210	215	215	I C 220	230	240	235	215	240	245	240	250
15	250	265	250	260	265	250	250	225	230	215	200	215	210	210	215	225	230	230	230	240	270	250	280	270
16	250	250	260	250	260	280	280	240	225	215	220	215	210	210	225	230	230	245	230	240	220	240	275	300
17	300	280	275	250	260	250	280	245	220	220	H 215	225	205	H 215	215	230	235	240	250	220	230	245	250	250
18	240	250	270	290	260	280	270	245	240	230	210	200	210	215	220	230	235	245	235	220	245	250	250	270
19	260	250	250	240	260	305	300	250	235	220	205	H 215	H 205	H 220	H 230	225	225	235	250	235	245	250	280	275
20	270	270	295	275	300	280	260	240	230	215	200	H 210	220	220	220	220	230	240	235	230	245	260	250	260
21	270	295	270	250	250	250	260	240	230	220	210	210	210	210	230	230	235	250	240	235	270	255	245	250
22	230	210	270	280	270	290	270	240	220	215	210	H 215	H 205	235	220	220	230	235	250	240	240	260	300	290
23	280	250	250	280	280	260	250	240	235	230	220	210	215	H 210	240	235	240	245	240	245	240	245	280	275
24	280	255	250	255	270	290	280	240	225	220	215	200	H 200	210	245	235	240	240	245	225	235	250	275	330
25	395	405	340	280	270	350	320	255	245	220	H 205	195	215	210	220	220	235	240	240	235	230	260	270	260
26	280	280	280	270	260	260	250	240	230	225	200	225	215	225	225	230	210	245	260	240	240	240	250	260
27	280	295	275	285	300	295	285	245	225	230	205	215	U B 220	215	220	235	230	240	255	280	330	290	320	290
28	F 260	320	U F 470	F 400	U F 390	F 340	325	H 250	245	H 235	220	225	220	225	220	230	230	250	255	240	250	260	290	290
29	290	305	350	350	340	335	300	260	240	H 230	H 210	H 230	H 230	230	230	H 230	230	250	305	260	270	260	350	300
30	290	290	300	320	335	360	310	250	230	220	215	270	220	220	220	220	235	245	250	245	245	265	260	290
31	280	310	310	310	300	290	290	260	H 235	H 230	H 225	H 225	235	230	230	225	235	250	270	270	250	275	275	270
MED	280	280	280	280	270	280	280	245	235	225	210	215	215	220	225	230	235	240	240	240	245	250	270	275
NO	31	31	30	28	28	29	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31

CENTRAL RADIO PROPAGATION LABORATORY, NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.

TABLE 81

IONOSPHERIC DATA

h'E, Km, Mar. 1957 — 75° W Mean Time

Station: Washington, D.C. Lat. 38.7°N Lang. 77.1° W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Manual ☐ Automatic ☒

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01								E S 140	H 113	U B 115	113	111	111	111	109	109	111	113						
02								117	H 111	111	U A 109	111	107	111	115	111	111	117						
03								109	H 109	H 105	107	103	H 109	109	U B 113	H 109	109	119						
04								B	H 109	H 101	105	103	107	107	107	103	105	H 119						
05								E S 130	115	109	H 109	H 105	101	105	101	E B 115	E B 119	117						
06								A	111	H 109	103	105	101	101	109	105	109	119						
07								U S 141	U A 131	113	111	109	111	111	109	111	109	115						
08								129	H 111	H 109	H 109	109	109	109	111	109	109	121						
09								U S 125	109	107	105	101	101	101	109	105	107	111						
10								U B 125	117	111	111	111	113	113	111	113	113	119						
11								U S 119	113	111	109	111	109	113	115	111	111	119						
12								119	111	109	103	103	101	101	101	101	101	105						
13								H 111	H 101	H 101	H 101	H 101	101	101	101	101	105	109						
14								H 109	H 109	H 109	101	101	109	H 109	109	I C 107	105	109						
15								H 119	109	105	101	103	H 103	H 103	H 109	107	109	109						
16								H 109	H 103	101	101	101	101	105	105	105	105	109	E S 121					
17								109	H 109	101	101	I A 101	H 101	H 101	H 101	H 101	H 101	109	135					
18								H 119	H 109	H 105	105	105	101	101	109	109	109	109	125					
19								H 119	H 105	H 103	H 101	H 107	103	H 103	H 103	H 101	H 109	111	S					
20								H 111	H 109	105	H 101	H 105	109	H 101	H 101	H 101	101	111	U S 131					
21								109	101	101	101	101	101	103	103	101	105	105	B					
22								H 115	109	109	103	105	109	119	109	109	109	115	U S 135					
23								113	111	109	109	109	107	105	103	109	109	117	131					
24								U B 117	H 109	109	109	H 109	111	I B 115	U B 119	117	105	119	135					
25							125	119	109	109	109	H 109	H 109	109	H 109	H 105	105	117	129					
26								H 119	H 105	103	103	109	U B 115	U B 109	115	109	111	111	U S 125					
27							125	117	109	109	E B 111	E B 115	B	B	107	109	115	111	A					
28								115	109	105	109	109	I B 109	U B 109	U B 111	111	H 109	109	H 121					
29								H 115	111	109	109	105	H 101	U B 115	H 111	H 109	U B 109	111	H 130					
30									111	109	U B 109	U B 109	U B 109	I B 112	U B 115	113	111	109	H 125					
31								H 115	H 111	H 109	U B 109	U B 119	U B 111	U B 115	U B 111	111	109	111	129					
MED								117	109	109	106	105	108	109	109	109	109	111	129					
NO							2	26	31	31	30	30	30	30	31	30	30	31	13					

CENTRAL RADIO PROPAGATION LABORATORY, NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.

TABLE 82

IONOSPHERIC DATA

h'Es, Km, Mar 1957 — 75° W Mean Time

Station: Washington, D.C. Lat. 38.7°N Long. 77.1° W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Manual ☐ Automatic ☒

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01	S	S	S	S	S	S	S	G	G	G	125	G	150	G	G	G	G	G	B	S	S	S	S	S
02	S	F 115	B	B	111	S	S	G	G	G	121	G	G	G	G	G	G	G	S	S	S	S	S	S
03	S	S	S	S	S	S	S	119	G	G	G	G	G	G	G	G	G	G	B	S	S	109	S	S
04	S	S	E	E	E	E	S	B	109	G	B	B	B	B	B	G	109	G	S	S	S	S	S	S
05	S	S	S	S	S	S	S	G	111	109	107	G	G	G	G	G	G	G	B	S	S	S	S	S
06	S	S	S	S	S	S	S	111	109	G	G	G	G	G	G	G	G	G	B	S	S	S	S	S
07	S	S	S	C	C	S	S	G	101	G	G	G	G	G	G	G	145	149	B	S	S	S	S	S
08	S	S	S	S	S	S	S	G	G	G	G	G	G	G	G	149	121	121	S	S	S	S	S	S
09	S	S	S	S	S	S	S	G	G	G	G	G	G	G	G	G	G	129	S	S	S	S	S	S
10	S	S	S	S	S	S	S	G	G	G	G	G	G	G	G	G	G	G	B	B	S	S	S	135
11	S	S	S	121	131	121	109	140	131	G	115	G	G	G	G	G	G	125	119	S	S	S	S	S
12	S	S	S	S	S	S	S	G	G	G	G	G	G	G	G	G	G	111	B	S	S	S	S	S
13	S	S	S	S	S	S	S	G	G	G	G	G	G	G	G	125	119	117	B	S	S	S	S	S
14	S	S	S	S	S	S	S	G	G	G	G	G	G	G	G	C	G	G	S	S	S	S	S	S
15	S	S	S	S	S	S	S	G	111	109	G	G	129	G	G	G	G	G	B	S	S	S	S	S
16	S	S	S	S	S	S	S	G	G	G	105	G	G	G	G	G	G	G	G	S	S	S	S	S
17	S	S	S	S	S	S	S	111	G	111	109	H 101	G	G	G	G	G	G	135	109	S	S	S	S
18	S	S	S	S	S	S	S	G	109	129	115	G	G	G	G	G	G	G	G	S	S	S	S	S
19	S	S	S	S	S	S	S	G	G	G	G	G	G	G	G	G	G	G	G	S	S	111	S	S
20	S	S	S	S	S	S	S	G	139	115	107	G	G	G	G	G	G	G	G	S	S	S	S	S
21	S	S	S	S	S	S	S	G	G	109	G	G	G	G	G	G	G	G	125	S	S	S	B	B
22	S	S	S	S	S	S	B	G	121	125	111	G	G	121	119	109	G	G	G	B	S	S	S	S
23	S	S	119	B	S	S	S	G	G	119	119	113	G	G	G	G	G	G	G	S	S	S	S	S
24	S	S	S	S	S	S	B	G	G	G	119	G	G	G	G	G	G	G	G	S	S	S	S	S
25	S	S	S	S	S	S	165	G	G	G	G	G	G	G	G	G	G	G	G	S	S	S	S	S
26	S	S	S	S	S	S	B	G	G	G	G	G	G	G	135	135	G	G	G	S	S	S	S	S
27	S	S	S	S	S	S	G	G	G	G	109	G	B	B	G	G	G	G	140	S	S	U S 210	S	S
28	S	270	S	S	S	S	B	G	G	G	G	B	B	B	131	G	G	G	G	S	S	S	S	S
29	S	S	S	S	S	S	B	G	131	119	109	G	G	G	G	G	G	G	G	S	S	S	S	S
30	S	S	S	S	S	S	B	139	119	115	G	G	G	B	G	G	G	G	G	S	S	S	S	S
31	S	S	S	S	S	S	129	G	G	G	G	G	B	B	G	G	G	G	G	S	S	S	S	S
MED								U 119	111	115	111							U 123						
NO		2	1	1	2	1	3	5	11	10	13	2	2	1	3	4	4	6	4	1		3		1

TABLE 83

IONOSPHERIC DATA

(M3000)F2, Mar. 1957 — 75° W Mean Time

Station Washington, D.C. Lat. 38.7°N Lang. 77.1° W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Manual ☐ Automatic ☒

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01	285	280	280	280	300	285	290	320	330	315	305	305	290	280	280	280	290	290	280	275	265	260	265	F 265
02	U F 250	U F 230	B	F	U F 250	U F 255	F 240	F 285	325	320	G	G	235	260	255	275	260	270	290	F 265	U F 265	F	F	U F 280
03	F	U F 290	U F 290	U F 250	U F 260	U F 280	U F 300	310	305	290	280	F 265	260	255	260	260	270	270	280	280	280	280	260	F 260
04	U F 255	F 270	265	U F 275	U F 275	F 280	U F 270	F 310	315	310	305	300	295	290	290	285	285	290	300	285	285	285	285	285
05	280	280	275	275	280	270	275	315	320	315	300	300	300	280	280	285	285	295	290	290	280	280	280	300
06	290	270	U F 270	F 260	F 250	265	295	320	325	320	300	285	295	290	290	285	285	285	295	295	290	295	290	270
07	270	280	280	C	C	J S 290	U F 300	325	315	320	300	290	285	285	280	280	280	285	290	285	U S 290	285	290	285
08	290	285	270	260	U S 255	265	300	330	340	300	300	295	290	280	270	280	280	285	290	290	275	260	260	265
09	270	260	245	240	U S 265	U F 260	F 280	F 320	315	305	H 300	H 280	275	275	275	275	280	285	290	285	285	290	285	260
10	255	240	260	250	U F 250	U F 260	U F 255	F 260	F 280	F 315	G 290	G	G	G	G	F 220	225	250	270	285	F 250	U F 265	275	F
11	U F 290	U F 270	U F 265	U F 270	F 260	F 260	U F 250	290	280	270	270	275	280	280	285	285	280	295	290	280	F 290	F 290	F 300	U F 275
12	F 265	F 270	F 255	F 260	U F 255	U F 255	U F 305	310	315	300	295	290	295	290	285	280	H 285	290	305	285	280	295	295	305
13	290	U F 280	F 275	F 280	F 290	F 290	U F 295	320	325	310	295	290	285	275	270	270	280	285	285	280	285	295	290	290
14	280	275	275	F 275	260	F 270	F 280	320	305	310	285	285	280	270	270	C	270	280	285	280	280	290	280	275
15	275	270	280	270	260	280	290	310	305	310	300	290	280	275	270	265	275	275	280	280	275	275	260	260
16	270	275	270	250	245	250	260	310	305	305	290	285	280	275	265	255	260	275	290	280	295	285	260	250
17	U S 250	U F 270	U S 260	265	260	270	275	325	325	300	295	280	280	H 265	270	270	270	285	285	285	290	285	295	280
18	280	275	260	250	250	F 280	U F 285	310	320	305	290	280	280	280	275	270	280	280	290	280	280	280	270	280
19	280	F 280	F 285	F 295	U F 280	F 270	F 280	U F 300	300	295	295	285	275	260	260	260	265	280	295	285	270	270	F 265	F 270
20	F 270	F 260	U F 250	U F 270	U F 250	F 270	U F 285	310	300	290	280	280	275	270	265	270	270	280	280	275	275	275	280	J F 280
21	U F 275	U F 265	F 280	U F 280	U F 280	U F 280	U F 310	F 300	315	290	295	280	270	260	260	255	265	270	285	275	270	280	290	U S 290
22	U S 295	255	265	260	265	260	290	310	305	290	275	270	270	260	260	270	270	280	275	275	270	260	240	250
23	260	270	260	F 265	270	F 270	F 315	320	325	305	290	280	280	275	270	280	280	290	295	J S 285	J S 280	275	J S 285	U S 260
24	J S 270	J S 300	J S 290	290	J S 265	J S 265	295	305	310	295	290	285	280	270	270	265	265	275	280	280	U S 285	285	270	F 250
25	U F 275	U F 280	S	U F 260	U F 270	U F 270	F 260	F 270	300	300	275	280	285	280	275	275	280	285	280	290	270	270	275	280
26	270	270	F 270	F 275	U F 280	U F 270	F 300	325	310	290	300	275	270	265	265	270	275	280	280	275	270	260	270	270
27	255	255	260	260	U F 265	F 265	J S 290	325	300	280	280	275	260	275	270	255	265	260	265	J R 270	U F 240	U F 285	U F 240	U F 275
28	U F 250	U F 260	U F 220	J F 270	U F 280	U F 250	U F 275	280	290	290	275	265	270	275	275	275	285	280	290	295	U F 280	J S 280	U F 275	U F 275
29	F 270	F 250	F 235	F 245	F 250	F 250	280	280	270	260	260	250	240	250	240	U S 245	250	255	240	U S 260	255	U S 260	230	F 260
30	250	255	U F 250	U F 250	U F 255	U F 250	U F 280	290	300	285	295	290	275	270	275	275	275	270	290	280	285	280	265	260
31	F 260	F 250	F 255	U F 250	U F 260	F 270	275	290	290	275	265	260	250	245	240	250	245	250	260	U F 280	270	255	260	265
MED	270	270	265	265	U 260	270	285	310	310	300	290	280	280	275	270	270	275	280	285	280	280	280	275	270
NO	30	31	29	29	30	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	30	30	30

TABLE 84
IONOSPHERIC DATA

(M3000) F1, Mar. 1957 — 75° W Mean Time

Station: Washington, D.C. Lat. 38.7°N Long. 77.1° W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Manual ☐ Automatic ☒

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01											L	L	L	L	L	L	L	L						
02											335	335	360	330	L	L	L	L						
03									L	L	335	330	H 320	320	330	330	L	L						
04										L	L	L	L	L	L									
05										L	L	L	L	L	L	L								
06										L	L	L	L	L	L	L	L							
07											L	L	L	L	L	L	L							
08											L	L	L	L	L	L								
09									L	L	L	L	L	L	L	L	L	L						
10												350	350	345	355	345	335	L						
11											H 330	L	L	L	L	L	L							
12											L	L	L	L	L	L	L							
13										L	L	L	L	L	L									
14										L	L	L	L	L		C	L	L						
15											L	L	L	L	L	L								
16										L	L	L	L	L	L	L	L	L						
17									L	L	L	L	L	L	L	L	L	L						
18									L	L	L	L	L	L	L	L	L	L						
19											H 380		H 345	L	U H 330	L	L	L						
20										L	L	L	L	L	L	L	L	L						
21												L	L	L	L	L	L							
22									L	L	L	L	L	L	L									
23								L	L	L	L	L	L	L	L	L	L	L						
24									L	L	L	L		L	L	L	L							
25											L	L	L	L	L	L	L	L						
26										L	L	L	L	L	L	L	L	L						
27								L	L	L	L	L	L	L	L	L	L	L	L					
28								L	L	L	L	L	L	L	L	L								
29									L	L	L			325	310	H 310	L	L	L					
30									L	L	L	L	L	L	L									
31									H 385	H 335	H 320	H 320	320	330	315	310	310	L	L					
MED											335		345	330	330									
NO									1	1	5	4	5	5	5	4	2							

CENTRAL RADIO PROPAGATION LABORATORY, NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.

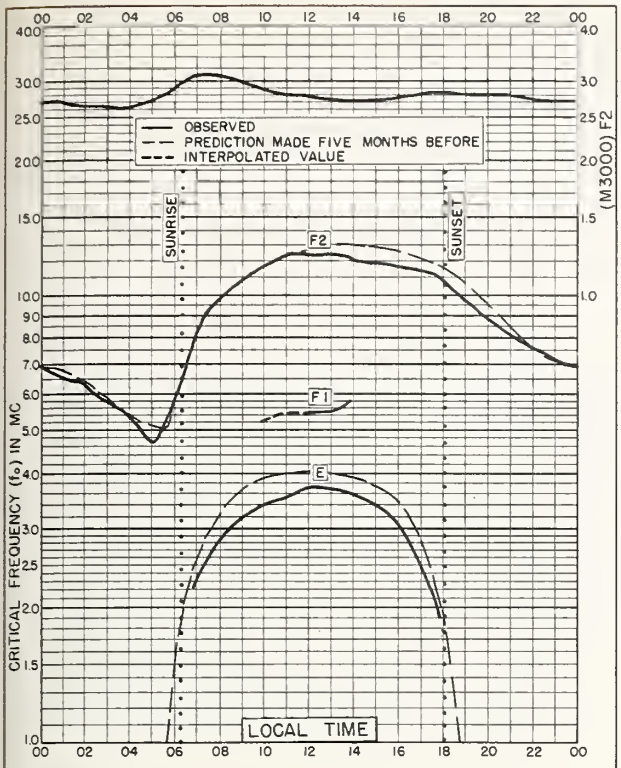


Fig. 1. WASHINGTON, D. C.
38.7°N, 77.1°W MARCH 1957

NBS 503

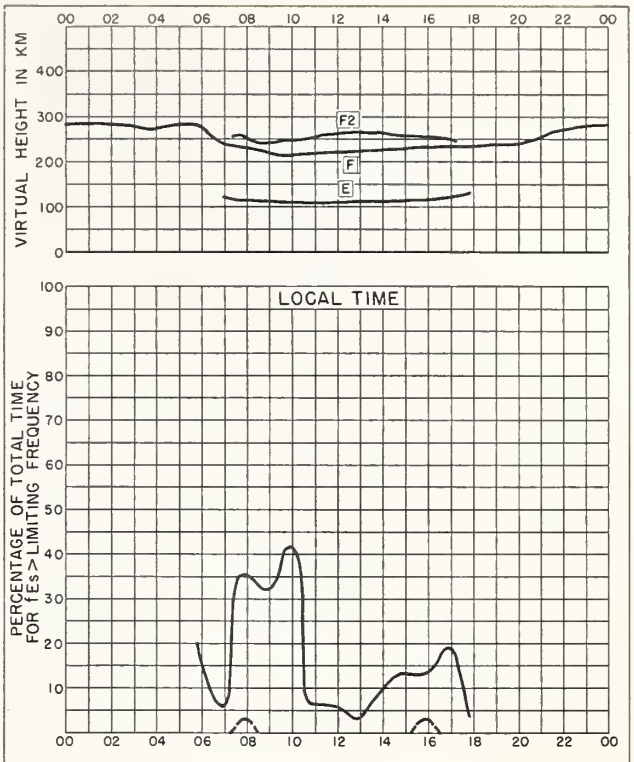


Fig. 2. WASHINGTON, D. C. MARCH 1957

NBS 490

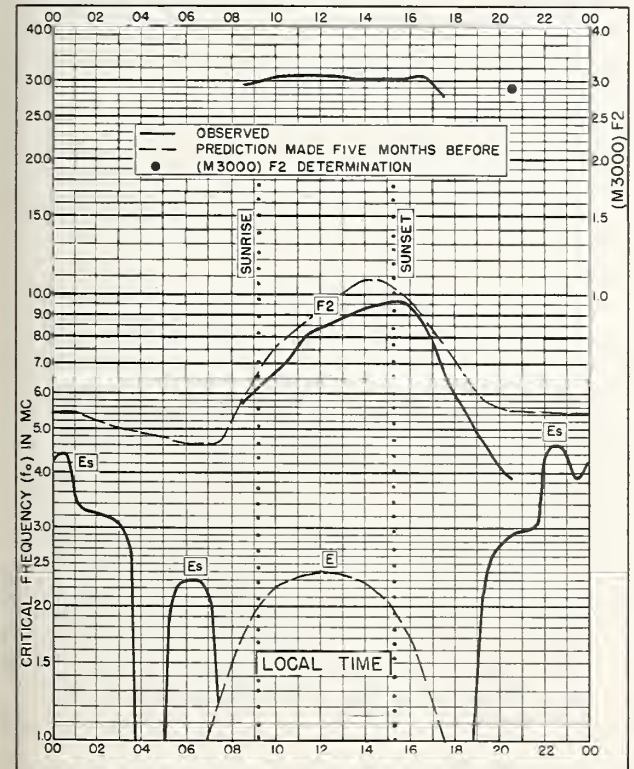


Fig. 3. POINT BARROW, ALASKA
71.3°N, 156.8°W FEBRUARY 1957

NBS 503

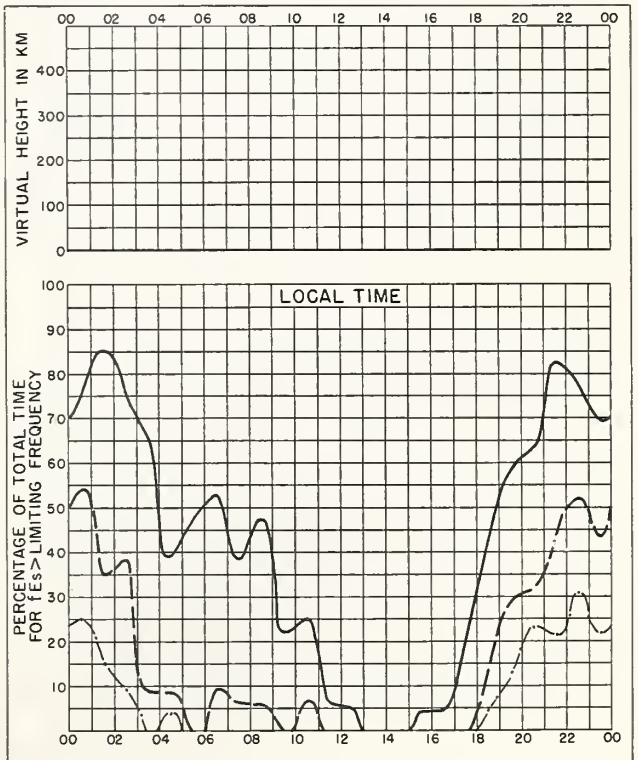


Fig. 4. POINT BARROW, ALASKA FEBRUARY 1957

NBS 490

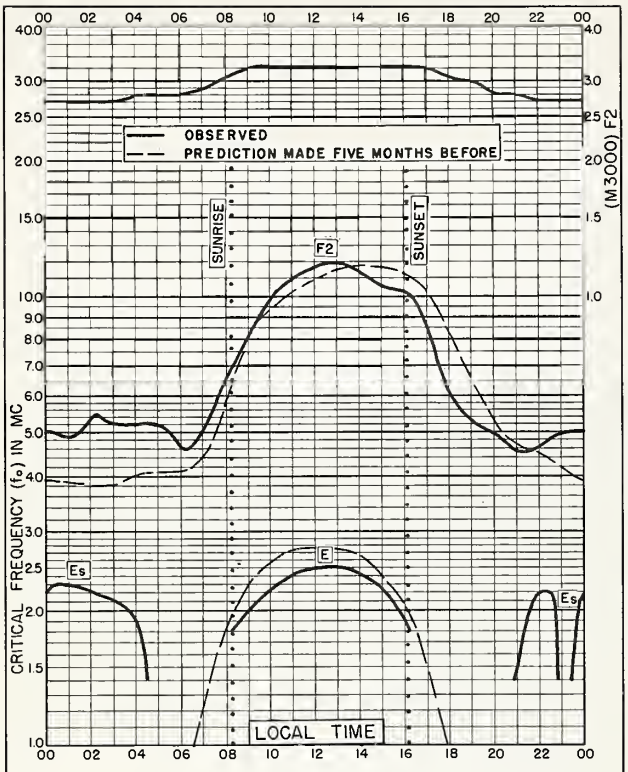


Fig. 5. LYCKSELE, SWEDEN
64.6°N, 18.8°E FEBRUARY 1957

NBS 503

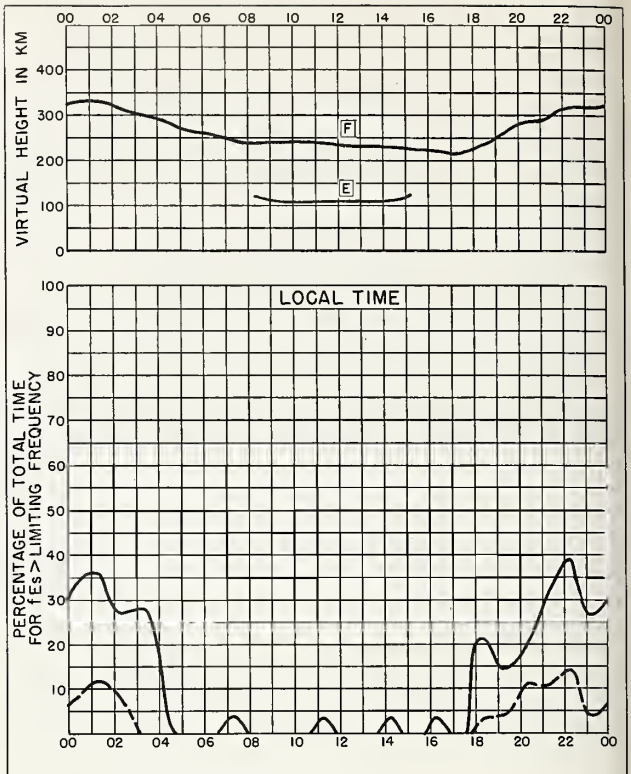


Fig. 6. LYCKSELE, SWEDEN FEBRUARY 1957

NBS 490

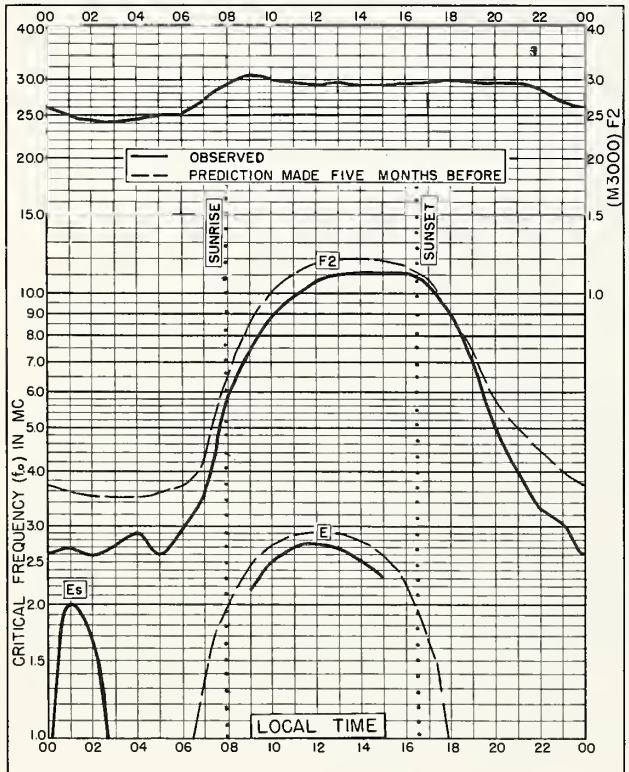


Fig. 7. ANCHORAGE, ALASKA
61.2°N, 149.9°W FEBRUARY 1957

NBS 503

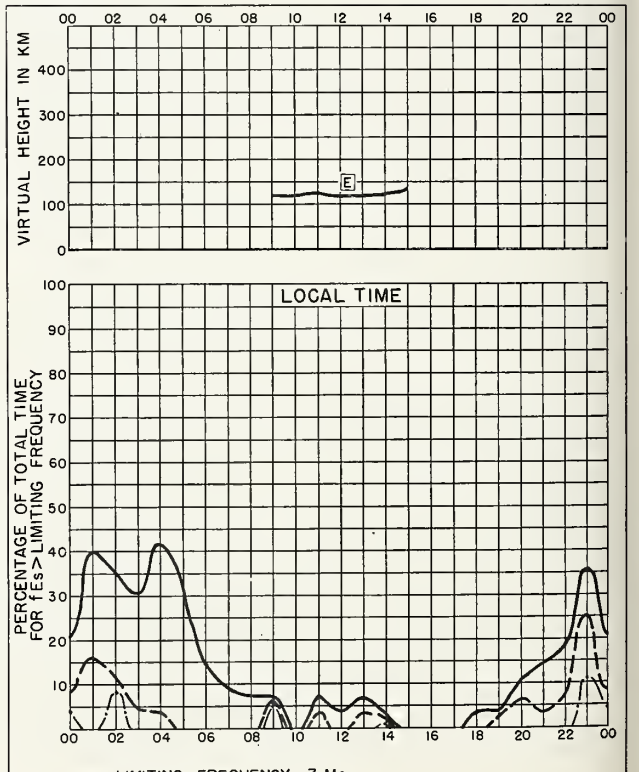


Fig. 8. ANCHORAGE, ALASKA FEBRUARY 1957

NBS 490

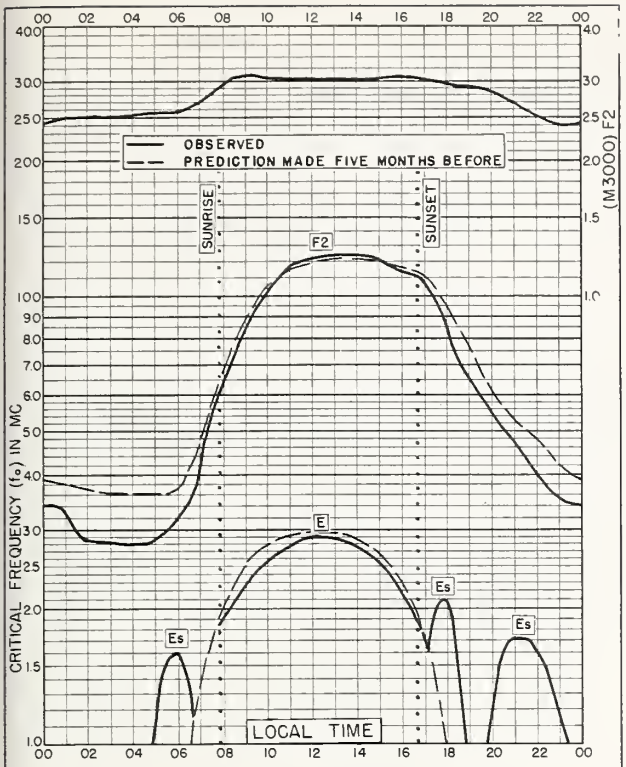


Fig. 9. OSLO, NORWAY
60.0°N, 11.1°E FEBRUARY 1957

NBS 503

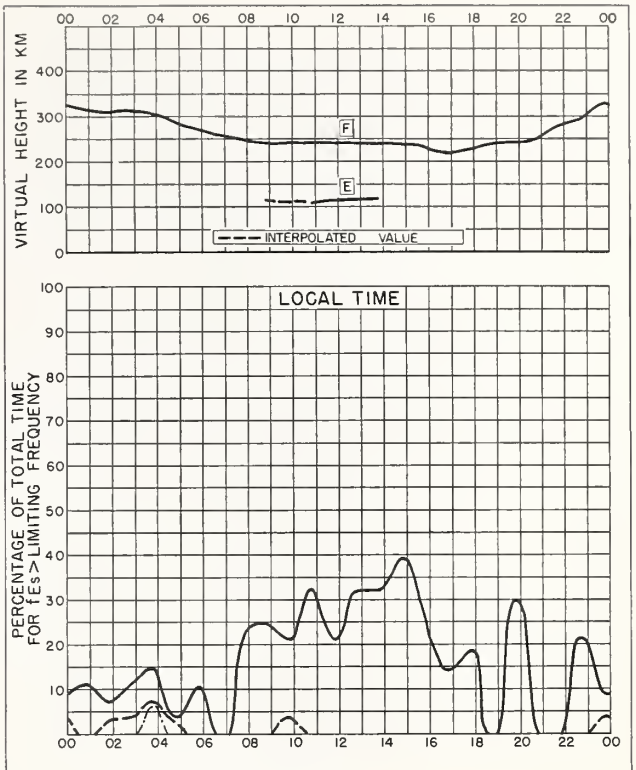


Fig. 10. OSLO, NORWAY FEBRUARY 1957

NBS 490

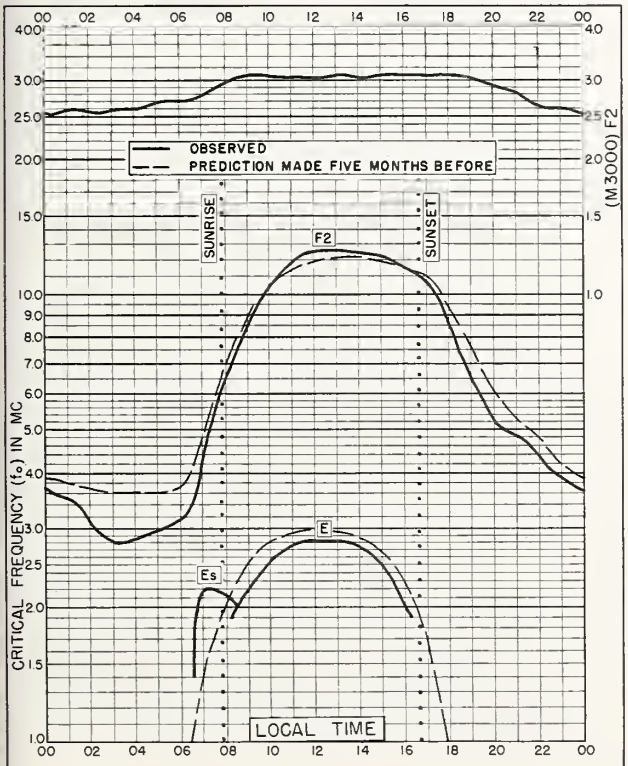


Fig. 11. UPSALA, SWEDEN
59.8°N, 17.6°E FEBRUARY 1957

NBS 503

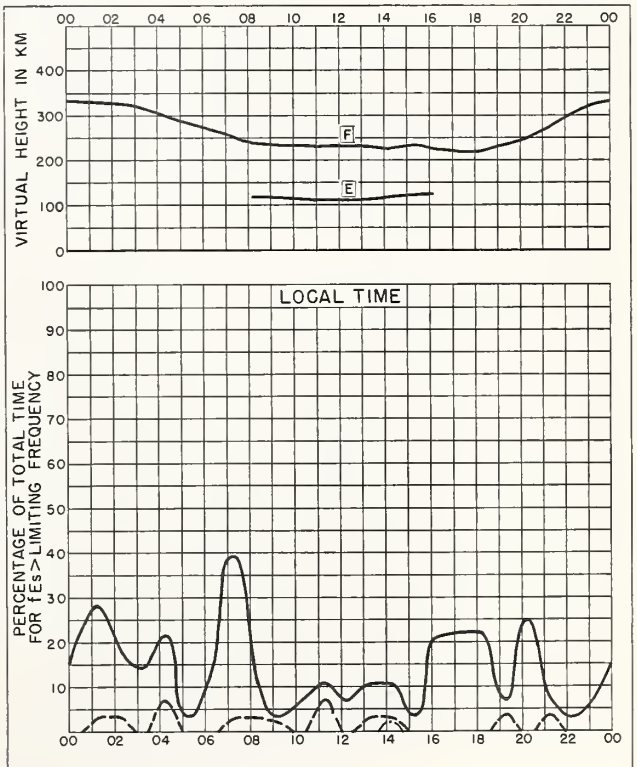


Fig. 12. UPSALA, SWEDEN FEBRUARY 1957

NBS 490

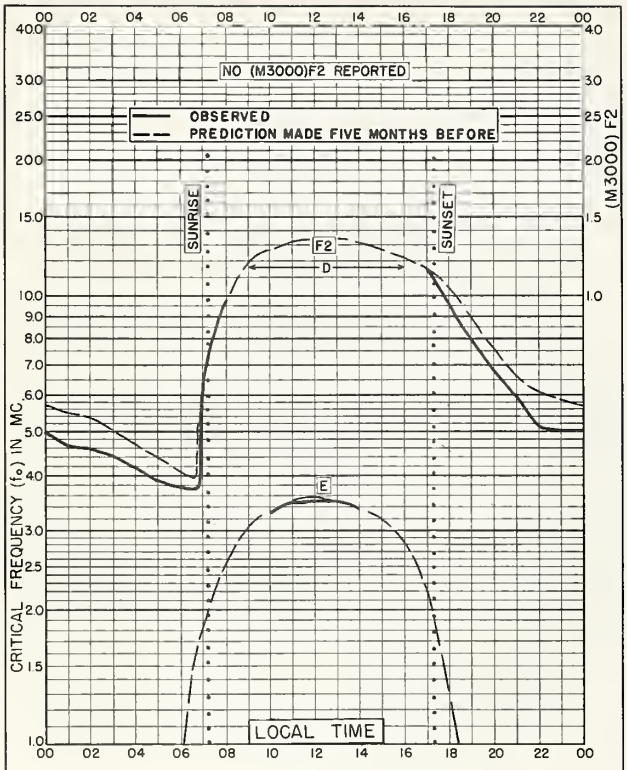


Fig. 13. GRAZ, AUSTRIA
47.1°N, 15.5°E FEBRUARY 1957

NBS 503

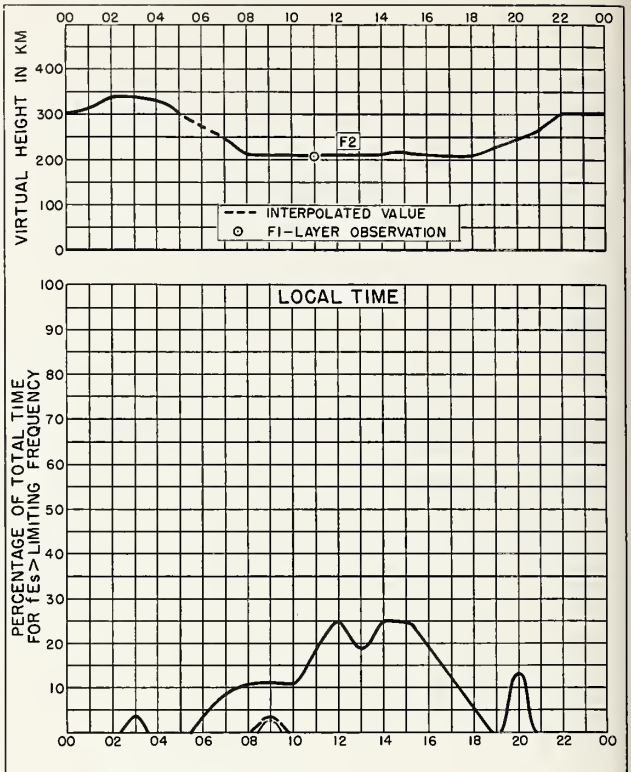


Fig. 14. GRAZ, AUSTRIA FEBRUARY 1957

NBS 490

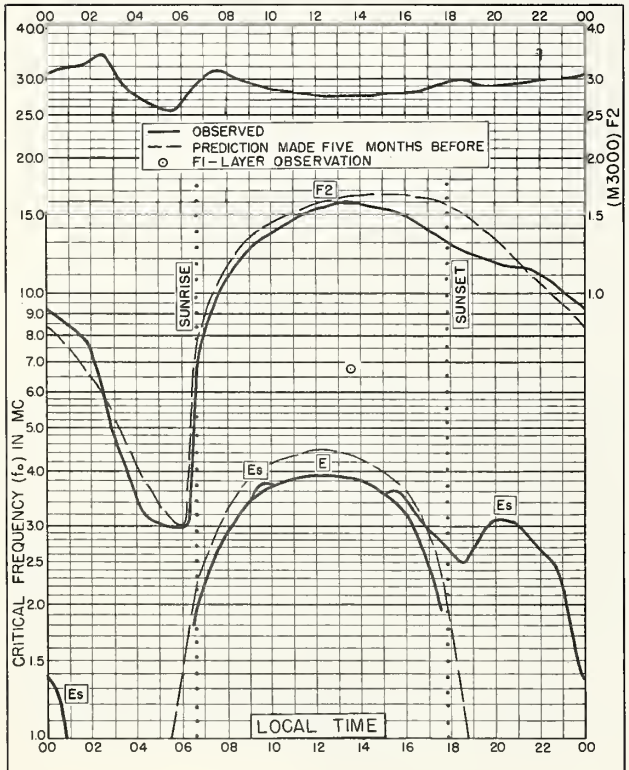


Fig. 15. MAUI, HAWAII
20.8°N, 156.5°W FEBRUARY 1957

NBS 503

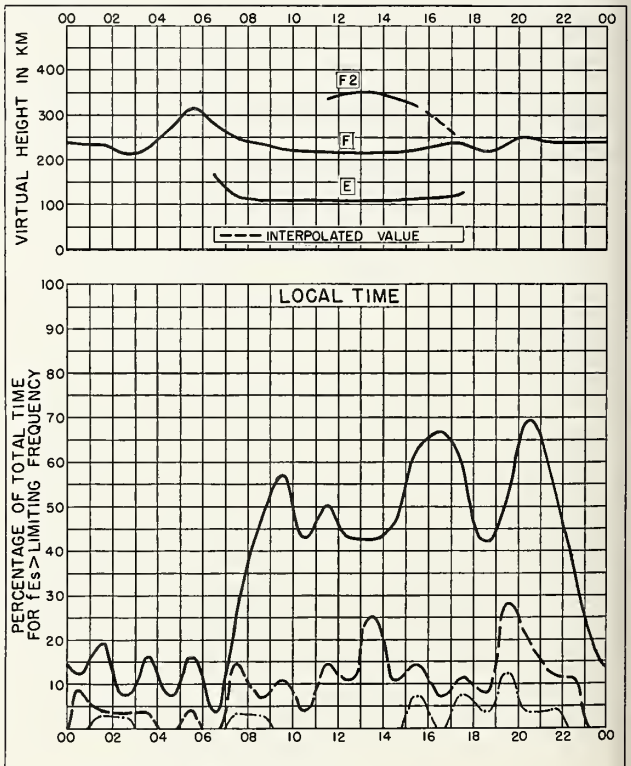


Fig. 16. MAUI, HAWAII FEBRUARY 1957

NBS 490

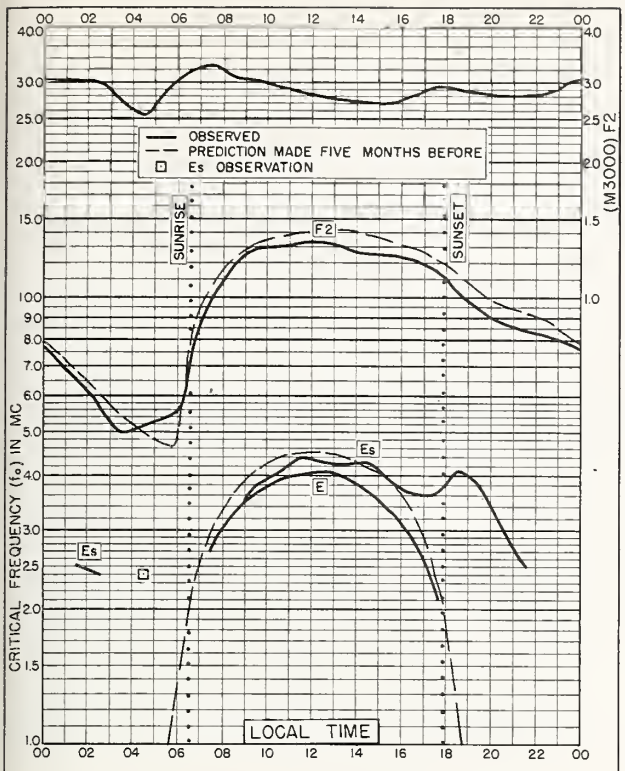


Fig. 17. PUERTO RICO, W. I.
18.5°N, 67.2°W FEBRUARY 1957

NBS 503

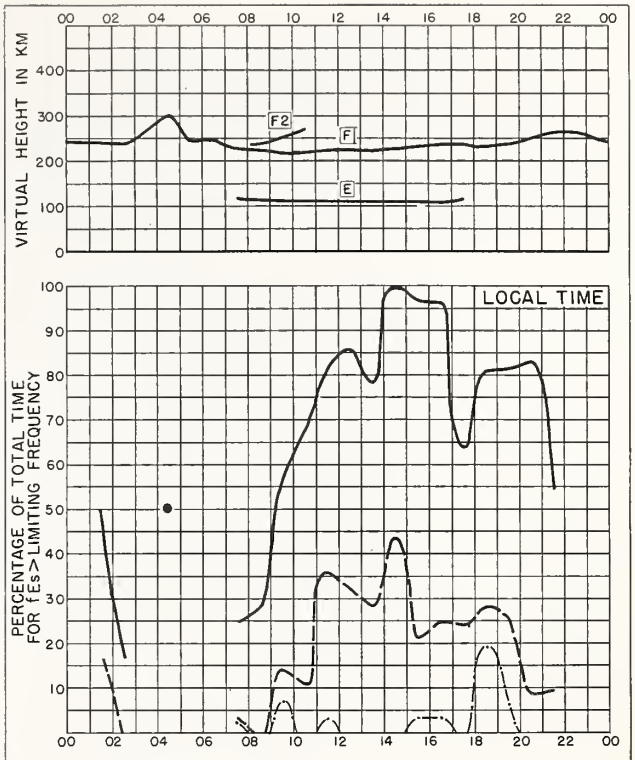


Fig. 18. PUERTO RICO, W. I. FEBRUARY 1957

NBS 490

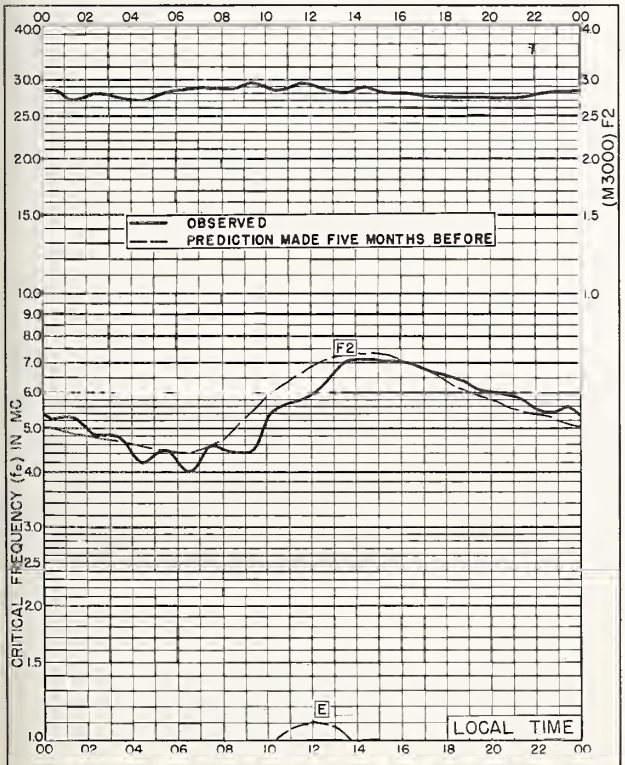


Fig. 19. THULE, GREENLAND
76.6°N, 68.7°W JANUARY 1957

NBS 503

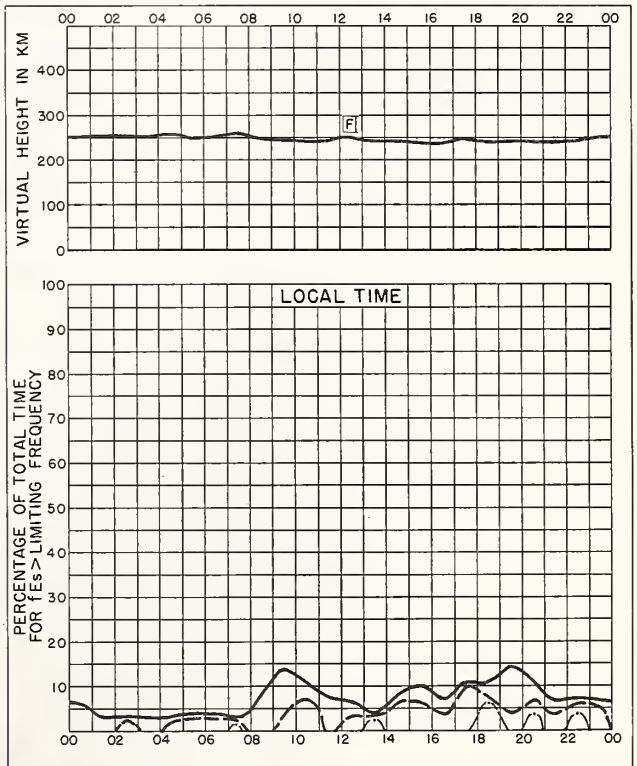


Fig. 20. THULE, GREENLAND JANUARY 1957

NBS 490

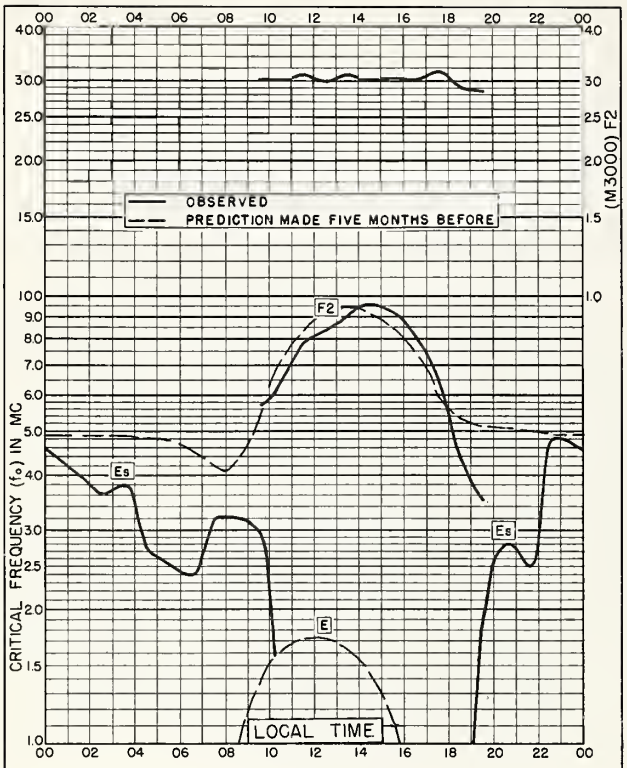


Fig. 21. POINT BARROW, ALASKA
71.3°N, 156.8°W JANUARY 1957

NBS 503

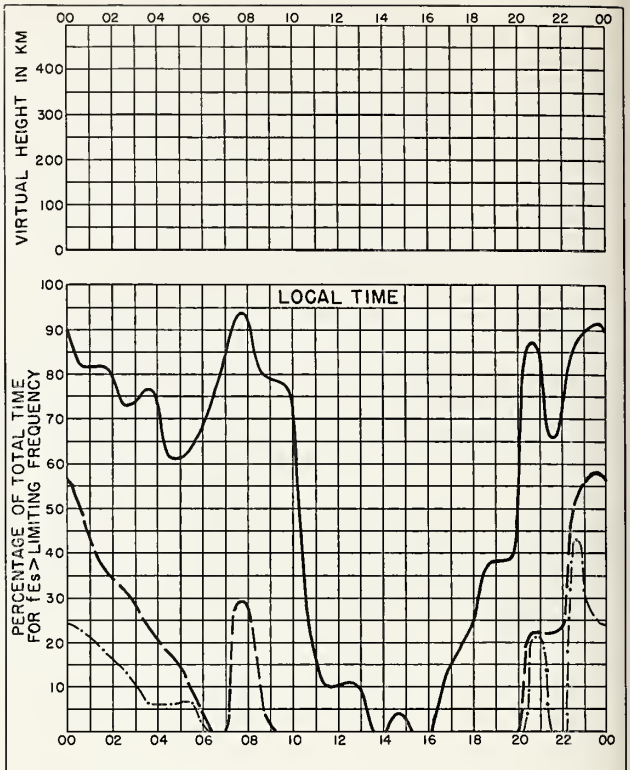


Fig. 22. POINT BARROW, ALASKA JANUARY 1957

NBS 490

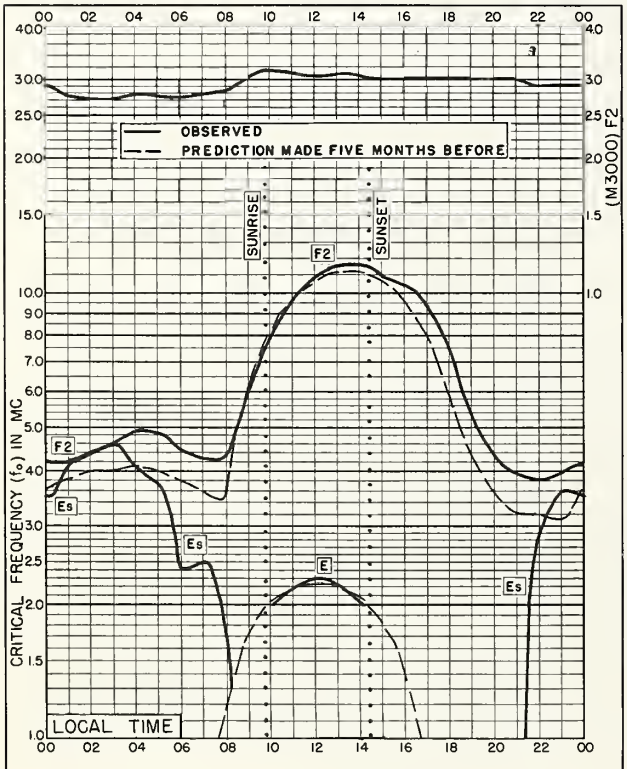


Fig. 23. FAIRBANKS, ALASKA
64.9°N, 147.8°W JANUARY 1957

NBS 503

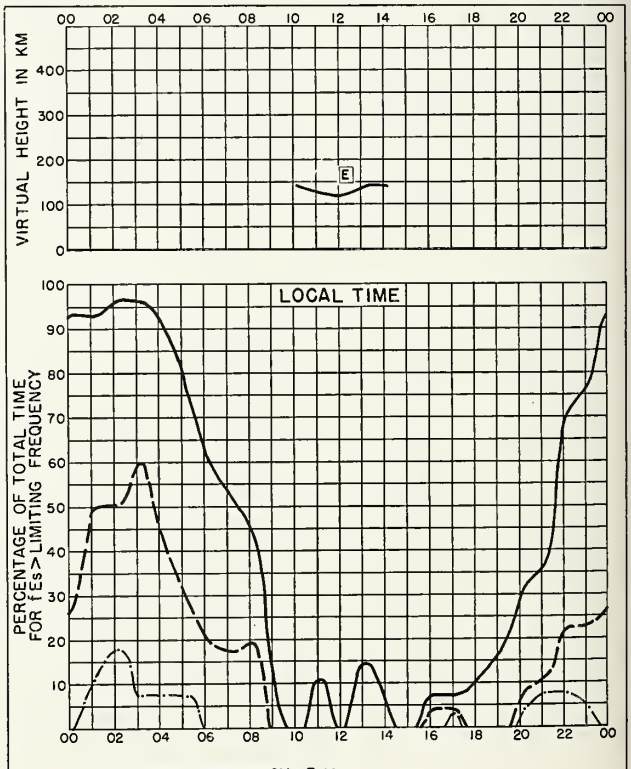


Fig. 24. FAIRBANKS, ALASKA JANUARY 1957

NBS 490

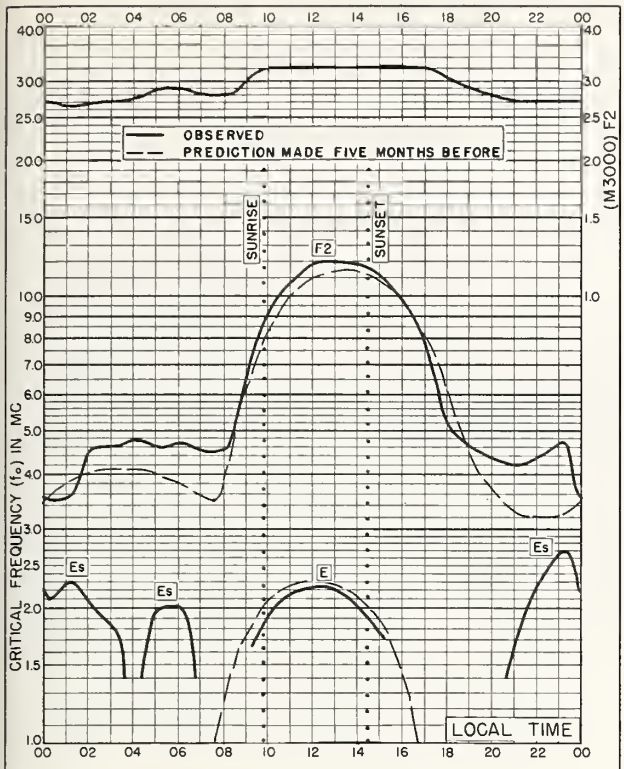


Fig. 25. LYCKSELE, SWEDEN
64.6°N, 18.8°E JANUARY 1957

NBS 503

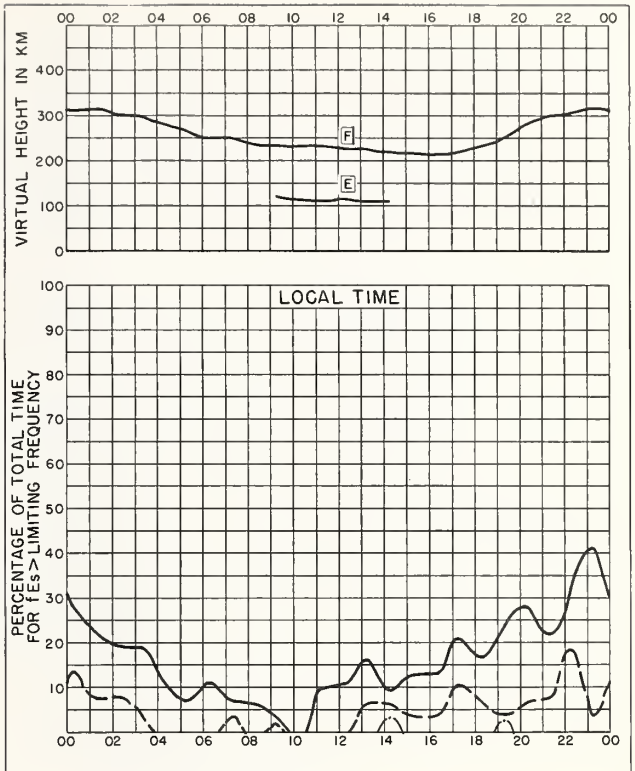


Fig. 26. LYCKSELE, SWEDEN JANUARY 1957

NBS 490

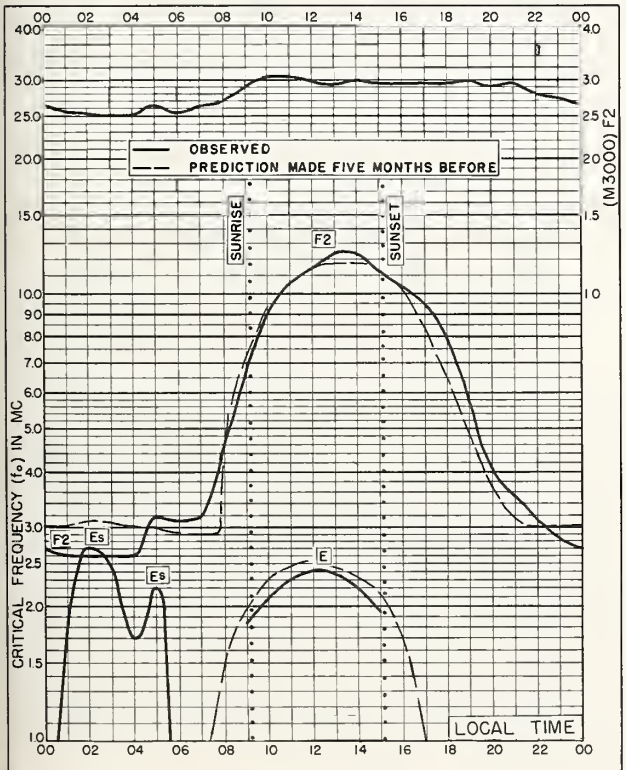


Fig. 27. ANCHORAGE, ALASKA
61.2°N, 149.9°W JANUARY 1957

NBS 503

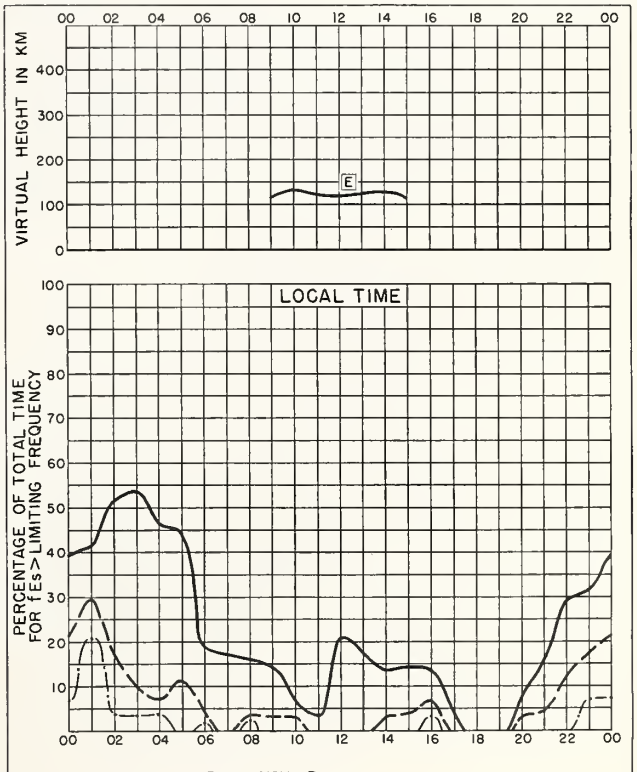


Fig. 28. ANCHORAGE, ALASKA JANUARY 1957

NBS 490

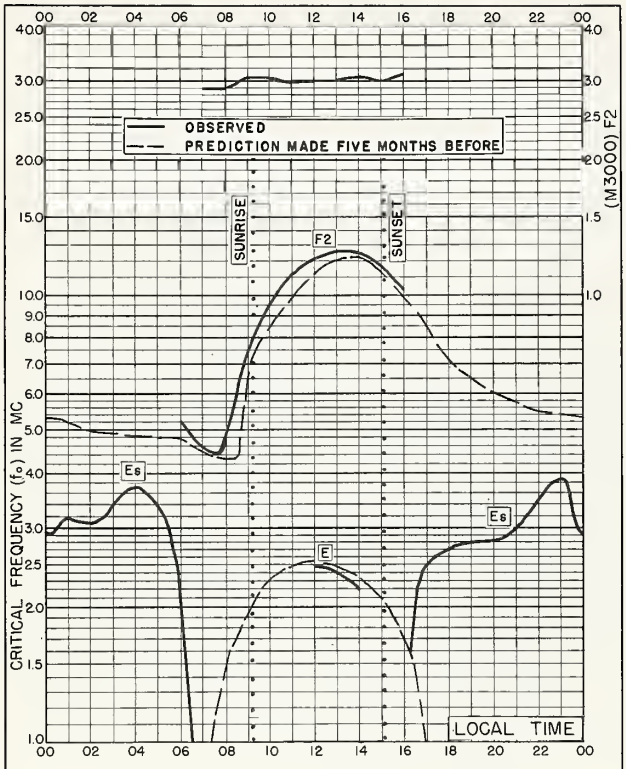


Fig. 29. NARSARSSUAK, GREENLAND
61.2°N, 45.4°W JANUARY 1957

NBS 503

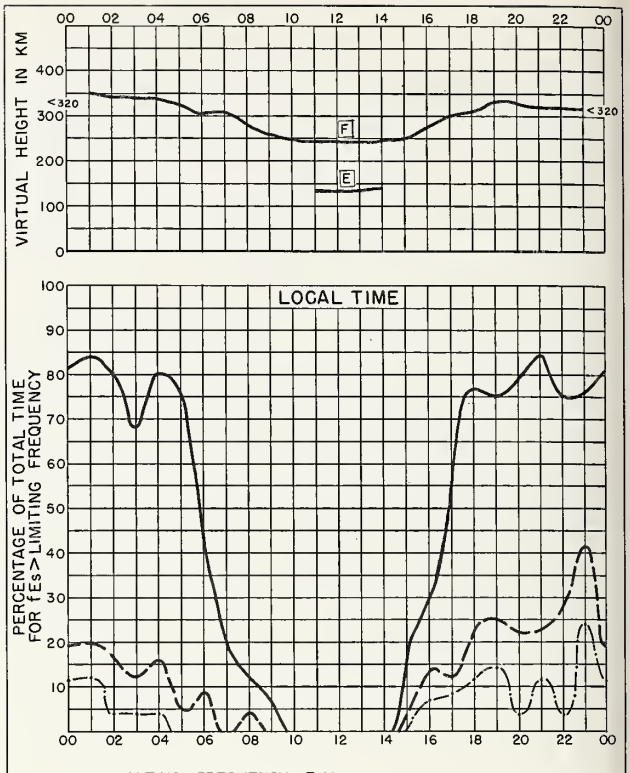


Fig. 30. NARSARSSUAK, GREENLAND JANUARY 1957

NBS 490

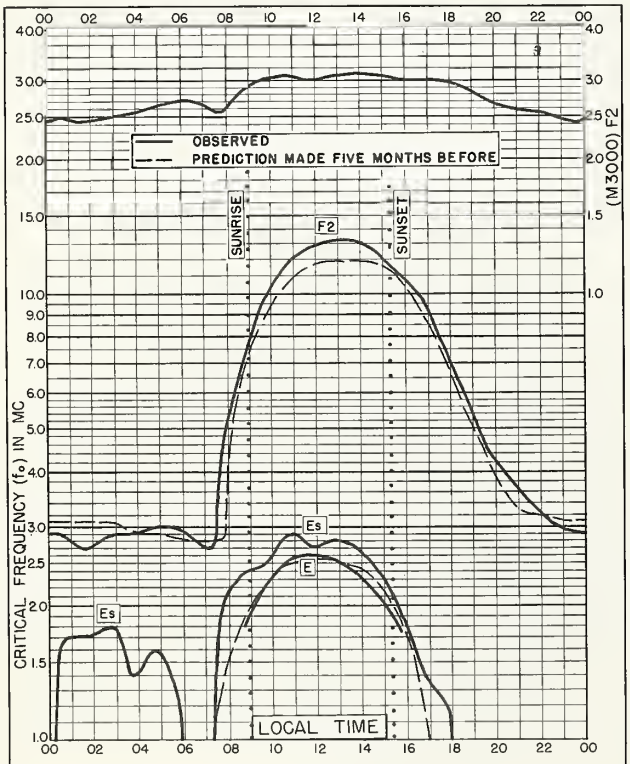


Fig. 31. OSLO, NORWAY
60.0°N, 11.1°E JANUARY 1957

NBS 503

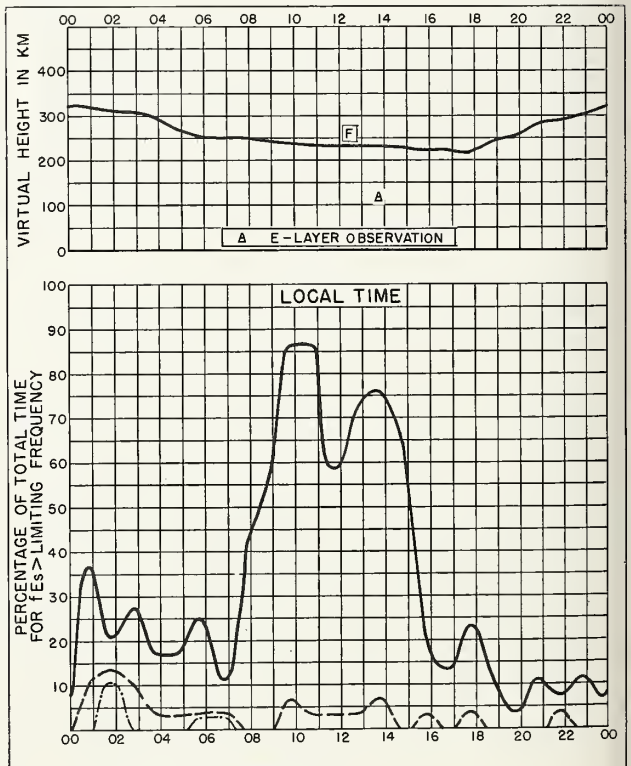


Fig. 32. OSLO, NORWAY JANUARY 1957

NBS 490

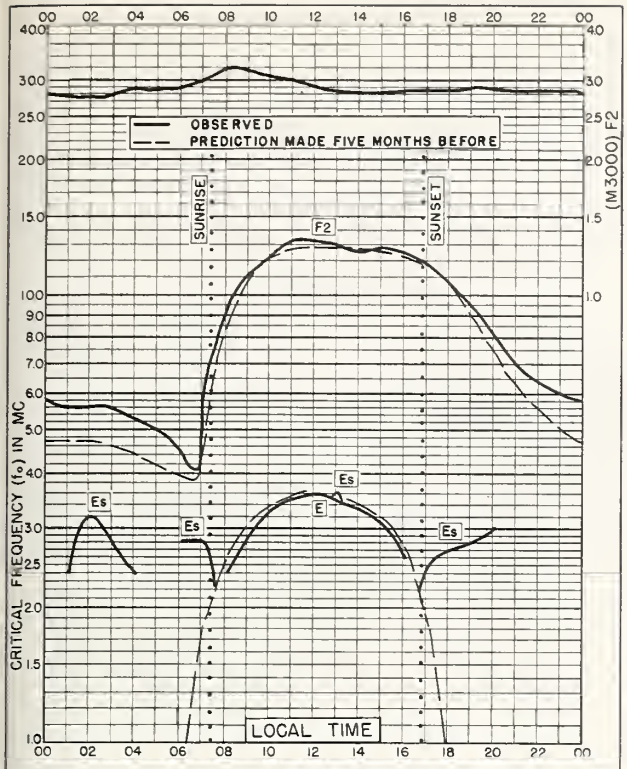
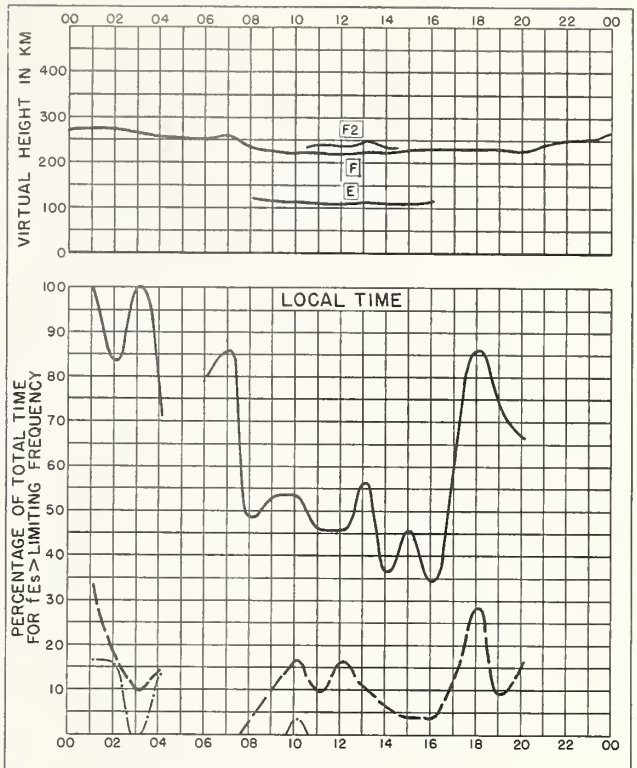


Fig. 33. FT. MONMOUTH, NEW JERSEY
40.3°N, 74.1°W JANUARY 1957

NBS 503



JANUARY 1957

Fig. 34. FT. MONMOUTH, NEW JERSEY

NBS 490

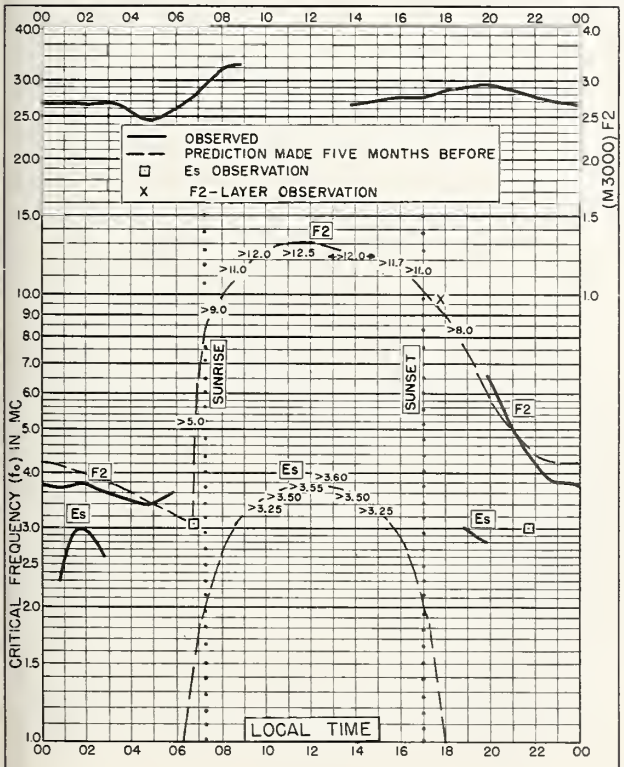
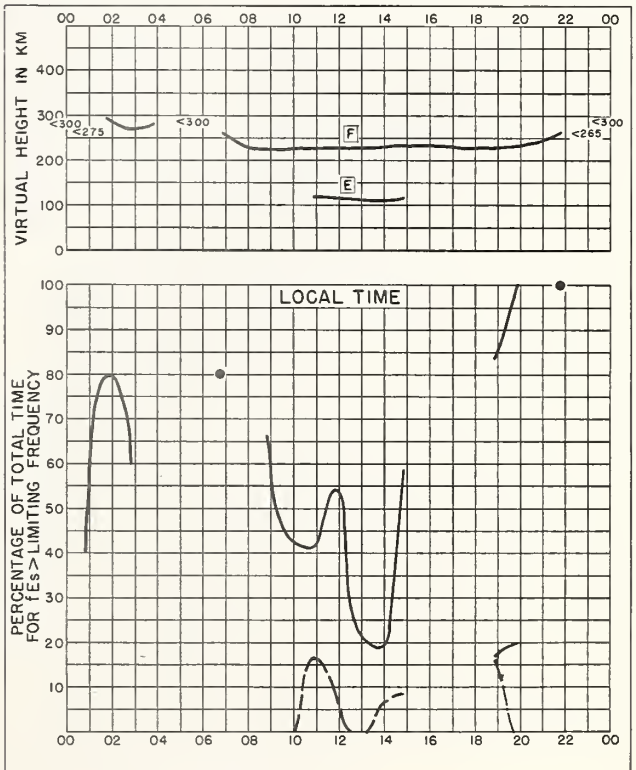


Fig. 35. SAN FRANCISCO, CALIFORNIA
37.4°N, 122.2°W JANUARY 1957

NBS 503



JANUARY 1957

Fig. 36. SAN FRANCISCO, CALIFORNIA

NBS 490

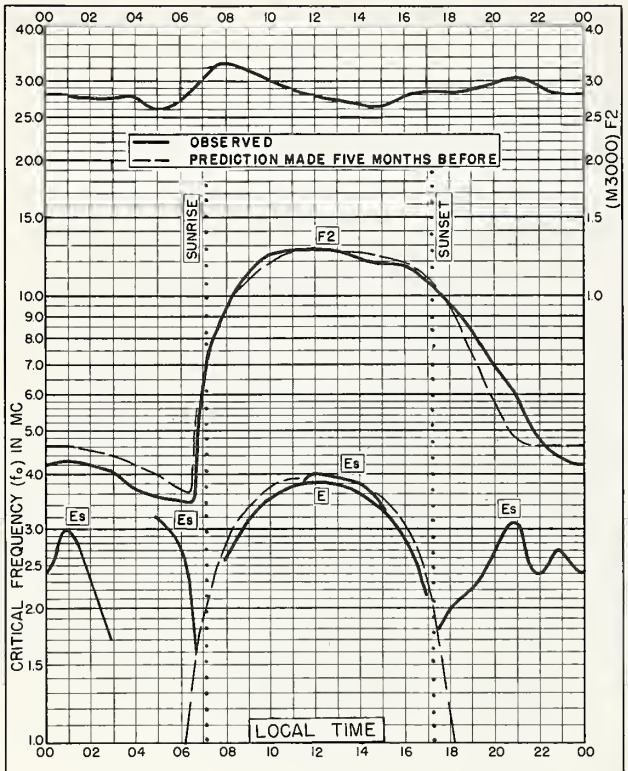


Fig. 37. WHITE SANDS, NEW MEXICO
32.3°N, 106.5°W JANUARY 1957

NBS 503

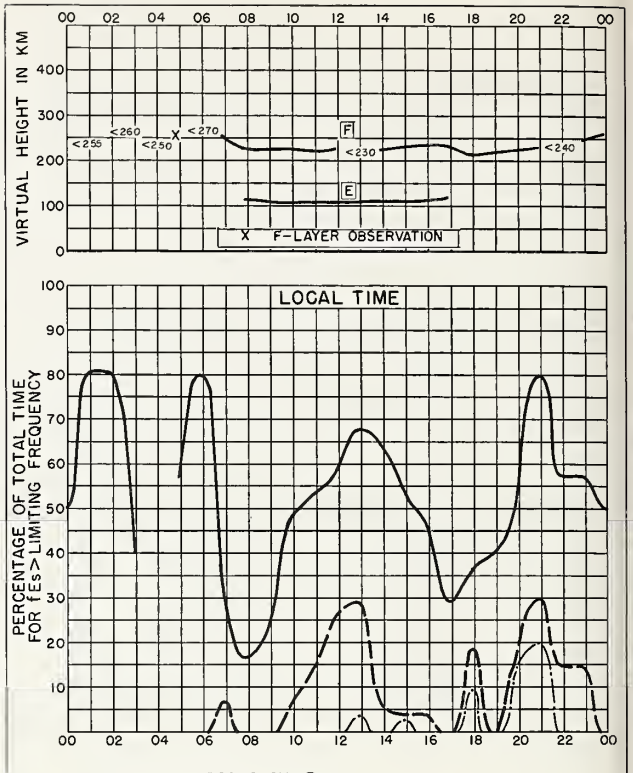


Fig. 38. WHITE SANDS, NEW MEXICO JANUARY 1957

NBS 490

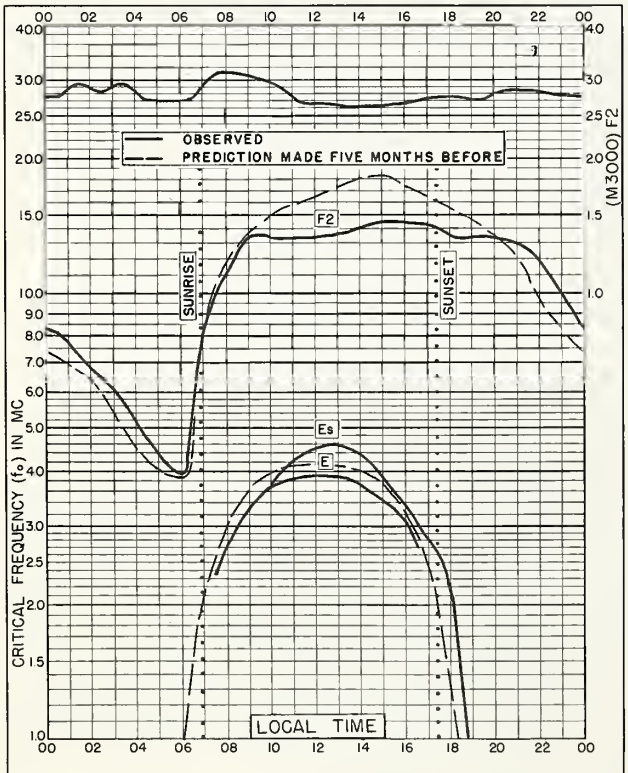


Fig. 39. OKINAWA I.
26.3°N, 127.8°E JANUARY 1957

NBS 503

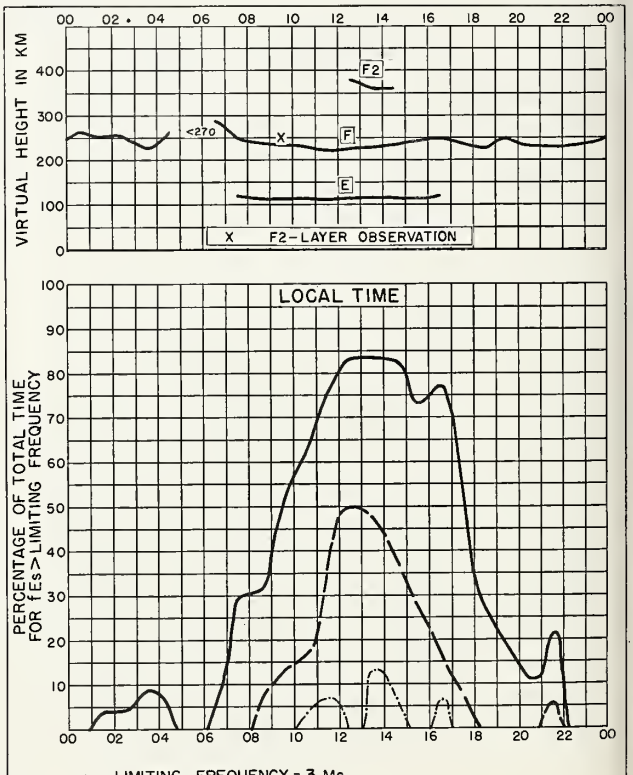


Fig. 40. OKINAWA I. JANUARY 1957

NBS 490

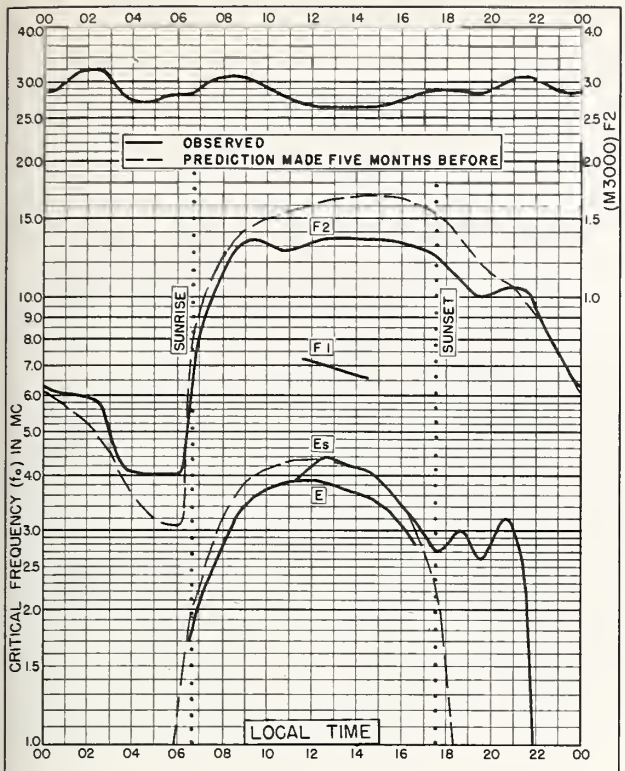


Fig. 41. MAUI, HAWAII
20.8°N, 156.5°W JANUARY 1957

NBS 503

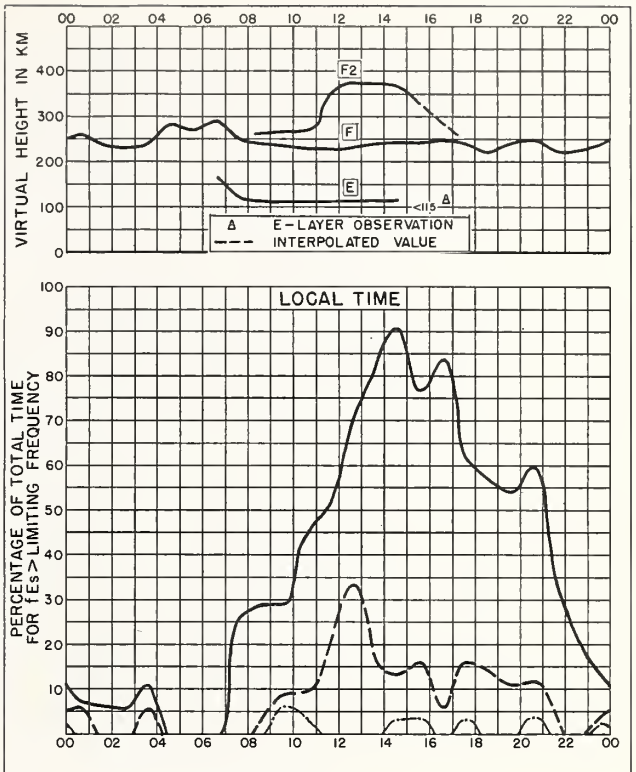


Fig. 42. MAUI, HAWAII JANUARY 1957

NBS 490

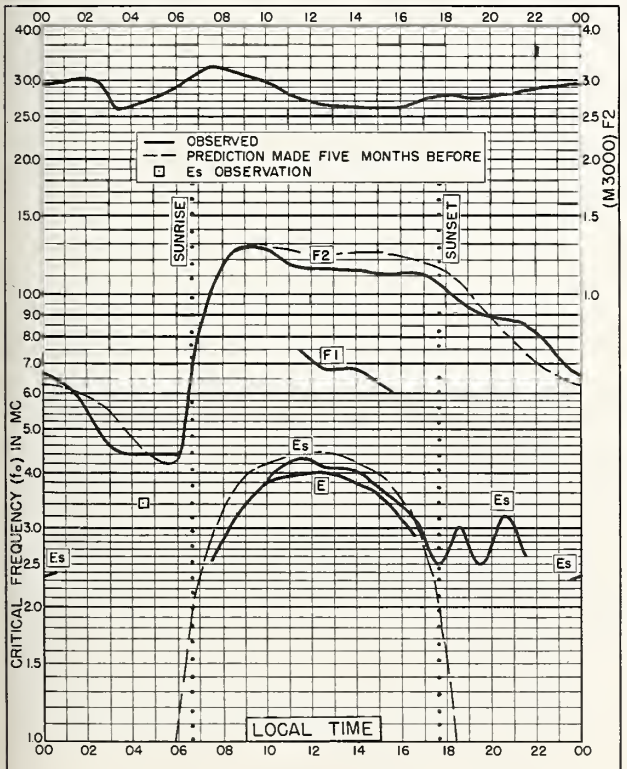


Fig. 43. PUERTO RICO, W.I.
18.5°N, 67.2°W JANUARY 1957

NBS 503

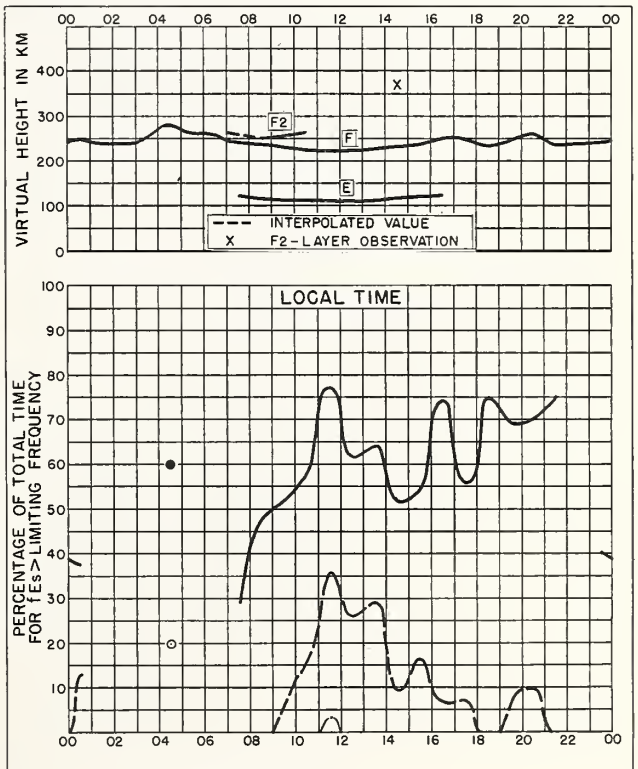


Fig. 44. PUERTO RICO, W.I. JANUARY 1957

NBS 490

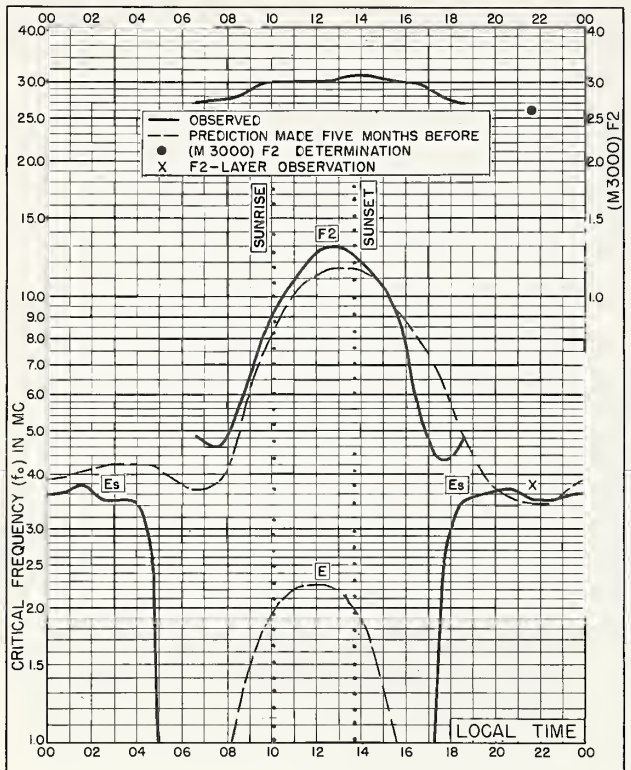


Fig. 45. REYKJAVIK, ICELAND
64.1°N, 21.8°W DECEMBER 1956

NBS 503

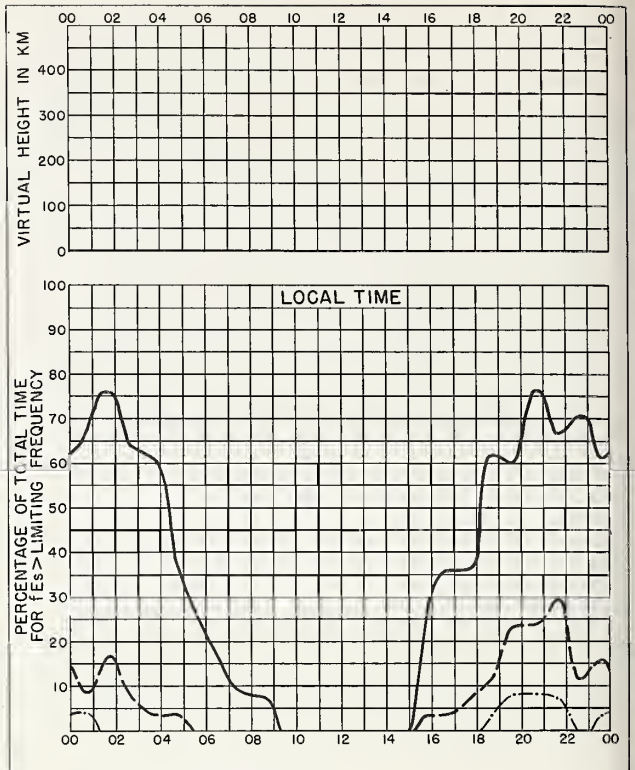


Fig. 46. REYKJAVIK, ICELAND DECEMBER 1956

NBS 490

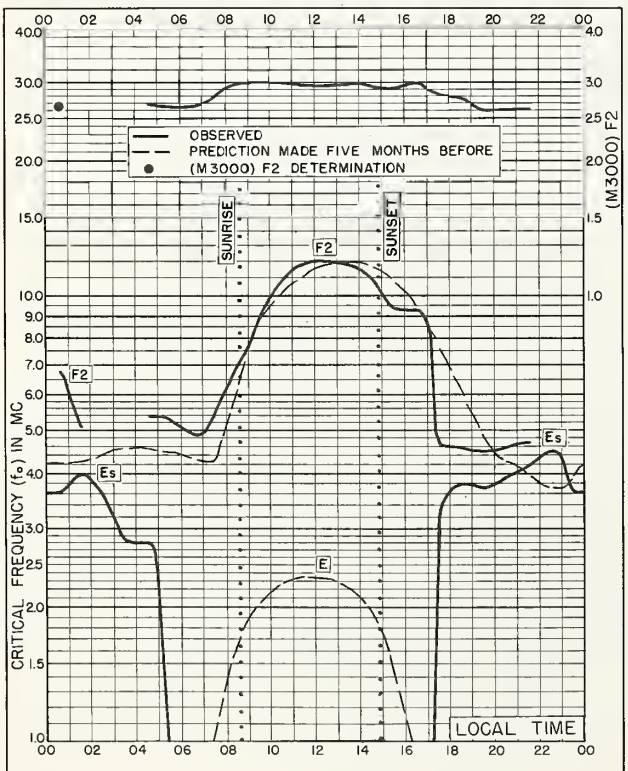


Fig. 47. REYKJAVIK, ICELAND
64.1°N, 21.8°W NOVEMBER 1956

NBS 503

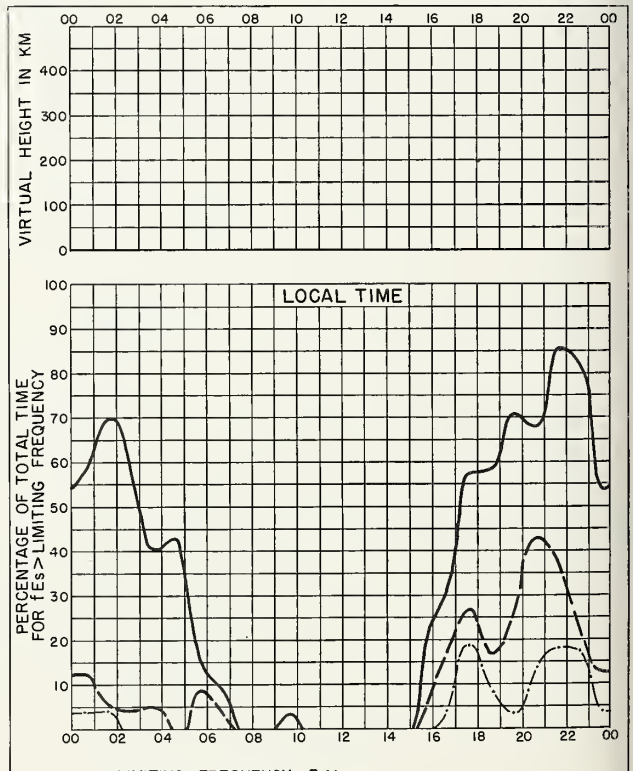


Fig. 48. REYKJAVIK, ICELAND NOVEMBER 1956

NBS 490

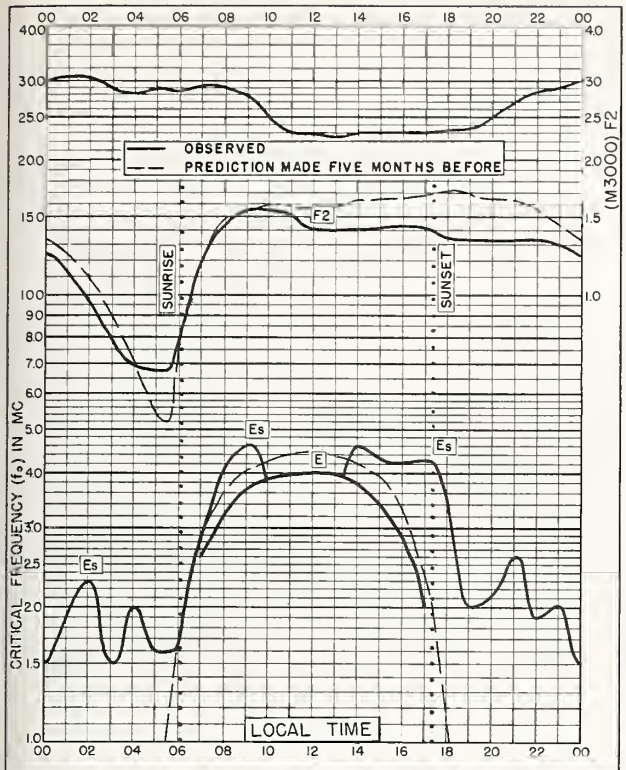


Fig. 49. BAGUIO, P. I.
16.4°N, 120.6°E NOVEMBER 1956

NBS 503

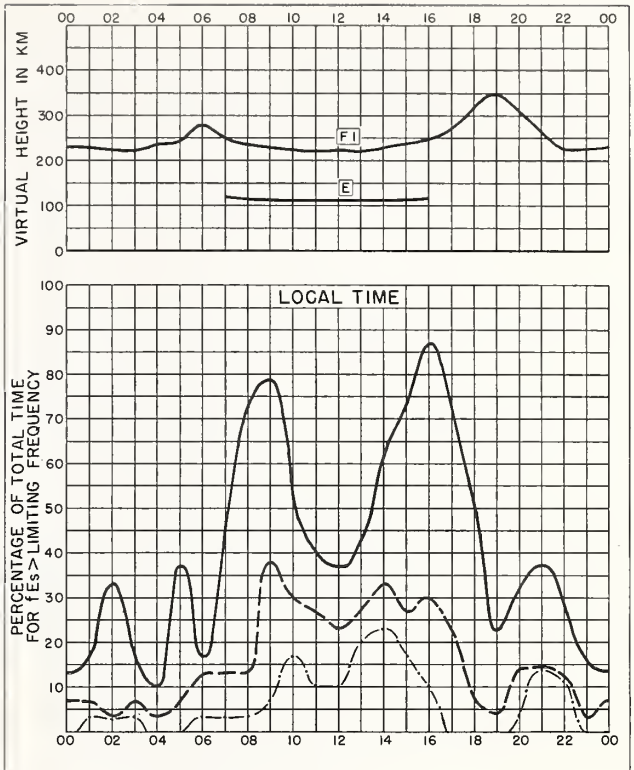


Fig. 50. BAGUIO, P. I. NOVEMBER 1956

NBS 490

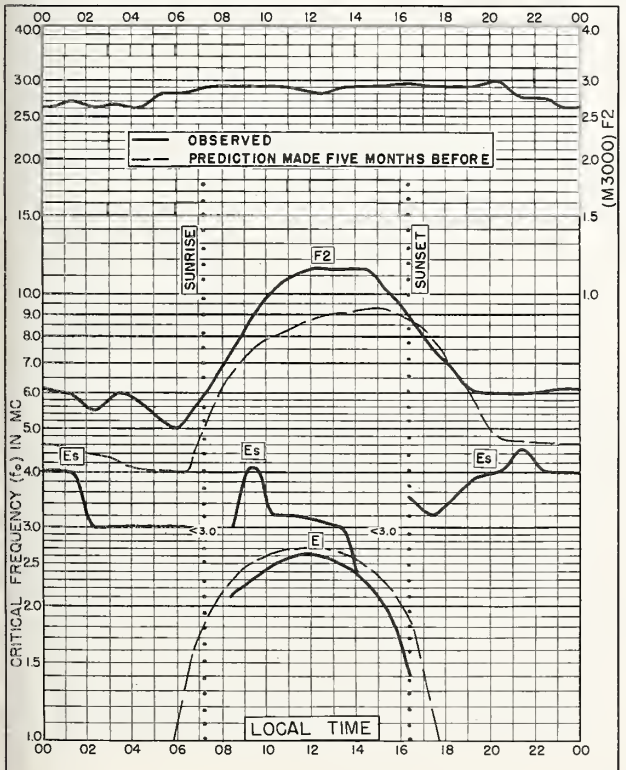


Fig. 51. KIRUNA, SWEDEN
67.8°N, 20.3°E OCTOBER 1956

NBS 503

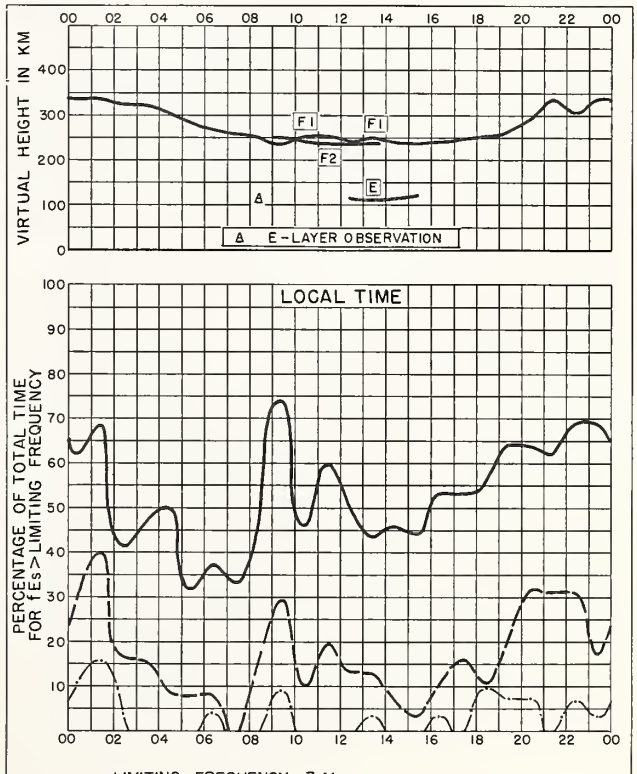


Fig. 52. KIRUNA, SWEDEN OCTOBER 1956

NBS 490

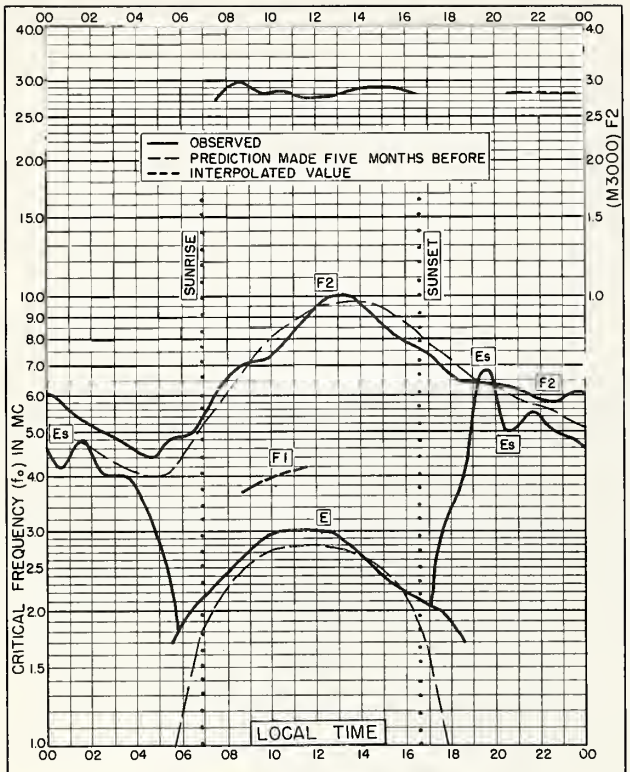


Fig. 53. BAKER LAKE, CANADA
64.3°N, 96.0° W OCTOBER 1956

NBS 503

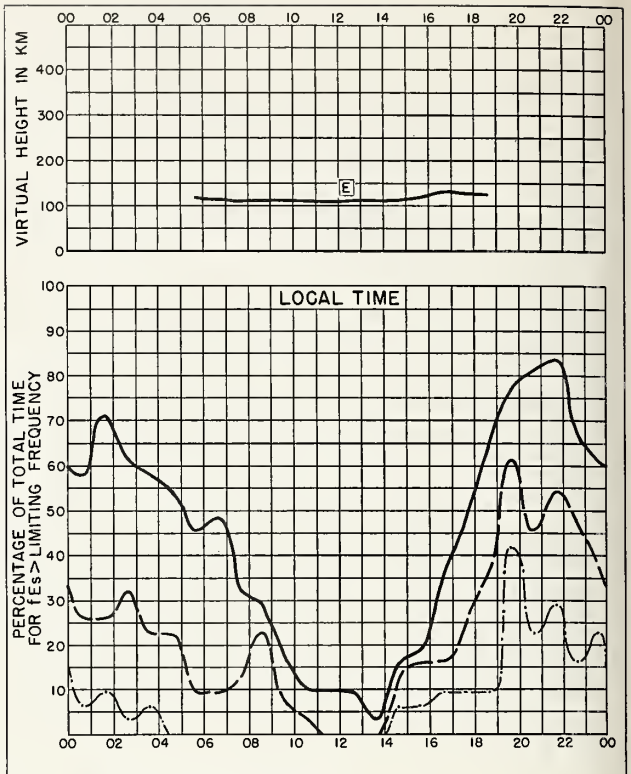


Fig. 54. BAKER LAKE, CANADA OCTOBER 1956

NBS 490

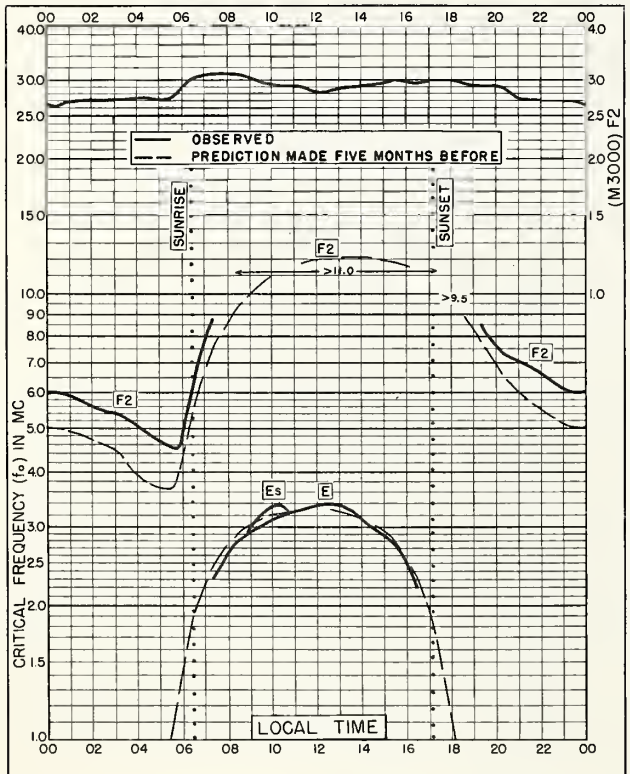


Fig. 55. De BILT, HOLLAND
52.1°N, 5.2°E OCTOBER 1956

NBS 503

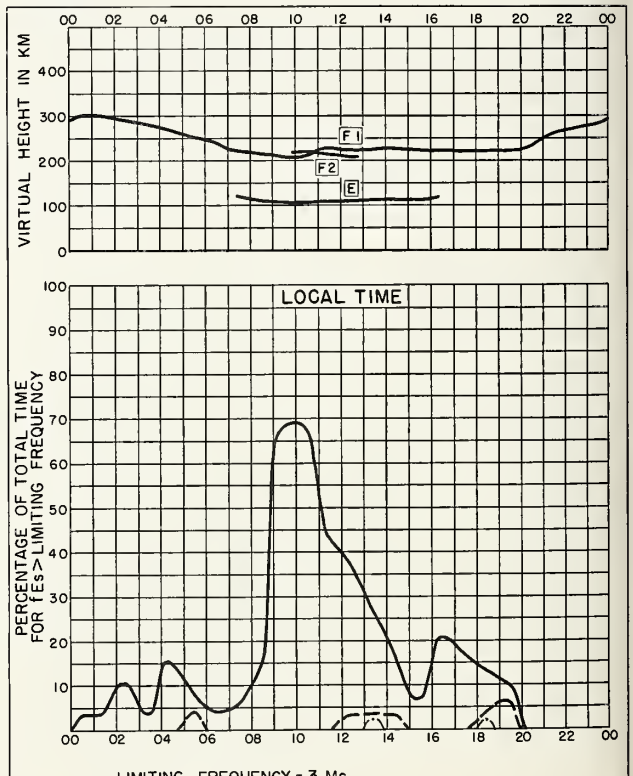


Fig. 56. De BILT, HOLLAND OCTOBER 1956

NBS 490

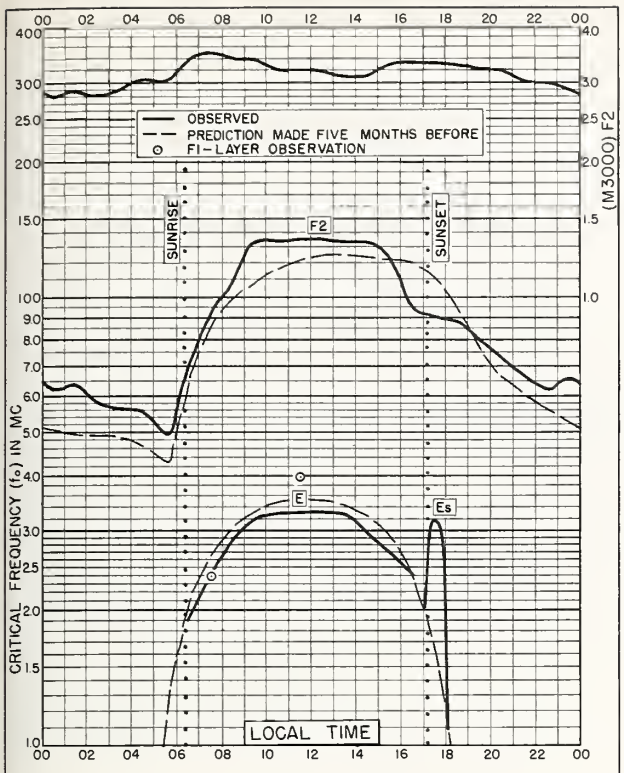
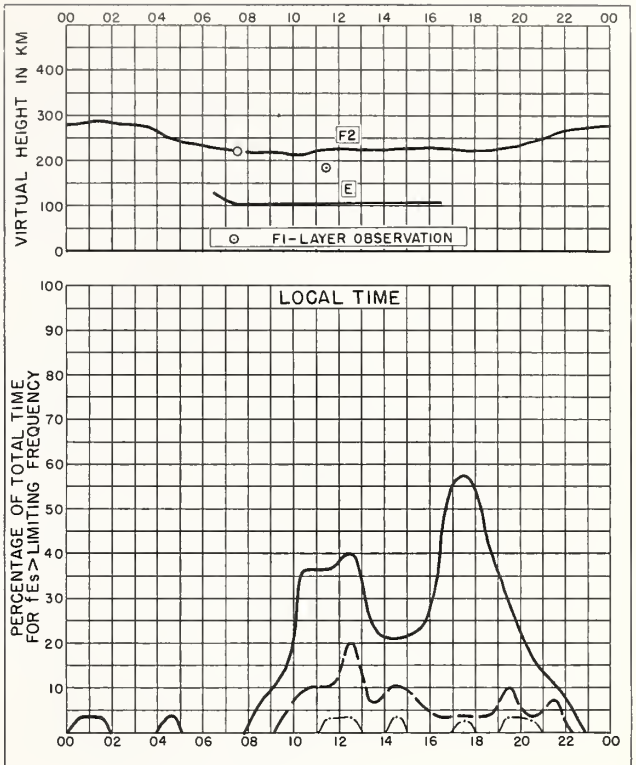


Fig. 57. SCHWARZENBURG, SWITZERLAND
46.8°N, 7.3°E OCTOBER 1956

NBS 503



OCTOBER 1956

Fig. 58. SCHWARZENBURG, SWITZERLAND

NBS 490

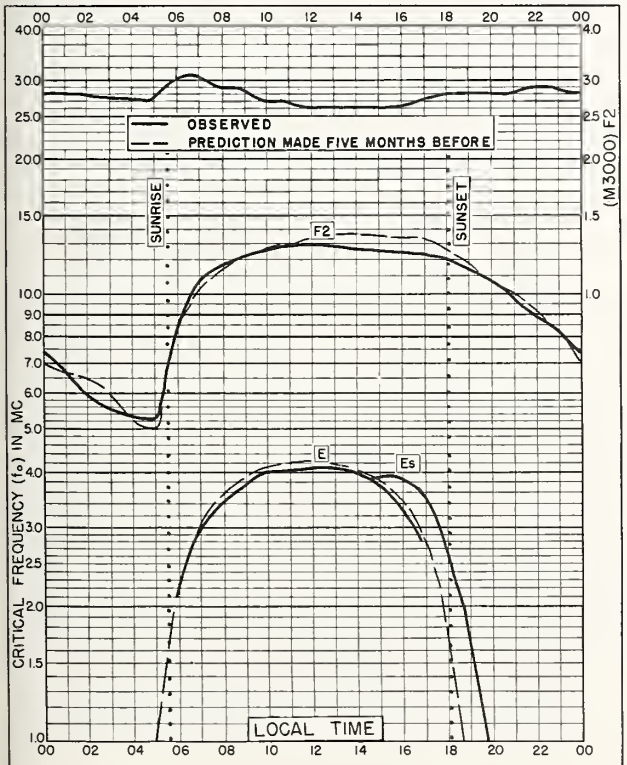
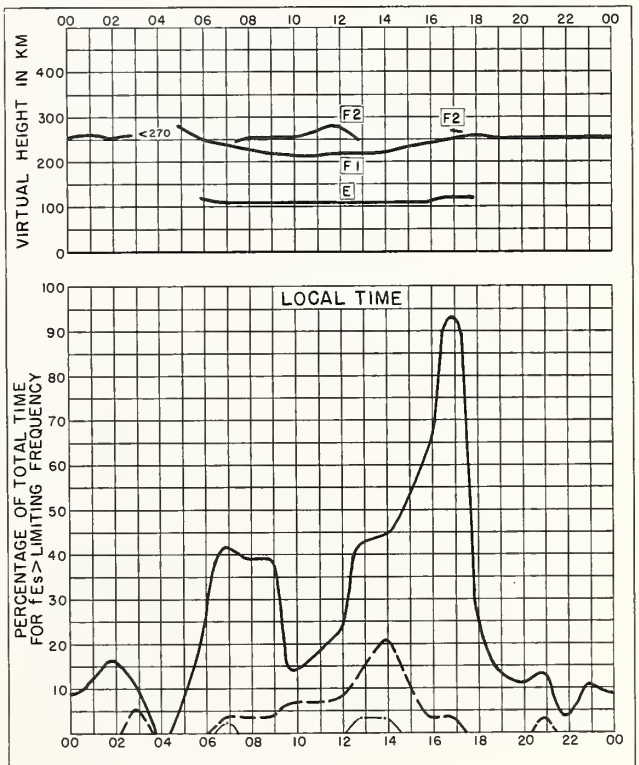


Fig. 59. JOHANNESBURG, UNION OF S. AFRICA
26.2°S, 28.1°E OCTOBER 1956

NBS 503



OCTOBER 1956

Fig. 60. JOHANNESBURG, UNION OF S. AFRICA

NBS 490

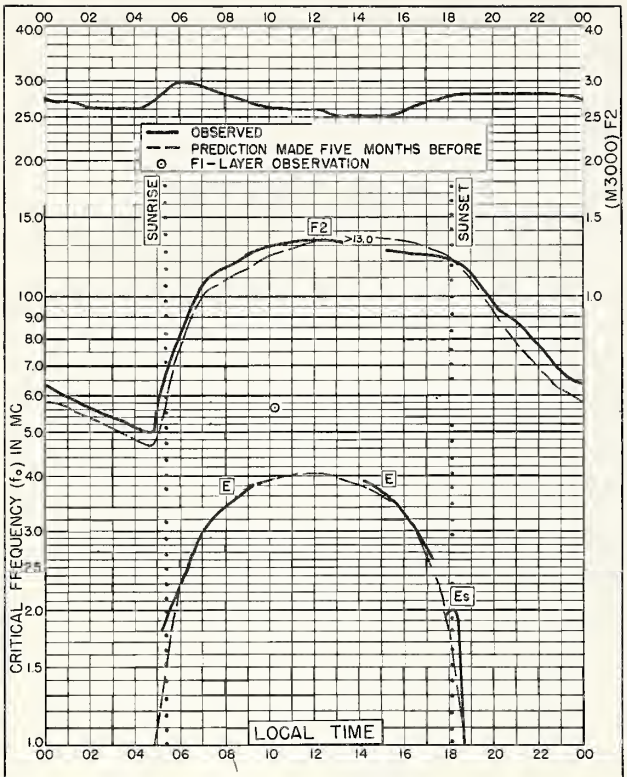
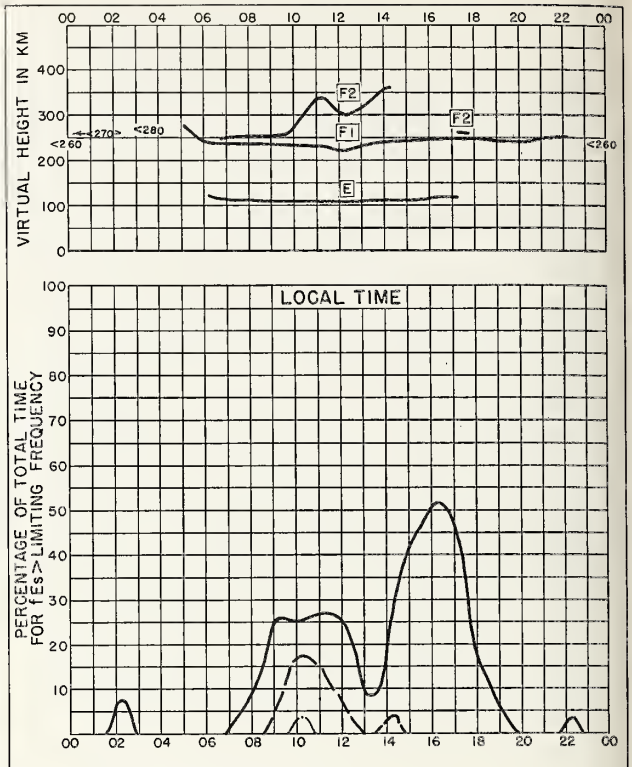


Fig. 61. CAPETOWN, UNION OF S. AFRICA
34.2°S, 18.3°E OCTOBER 1956

NBS 503



OCTOBER 1956

Fig. 62. CAPETOWN, UNION OF S. AFRICA

NBS 490

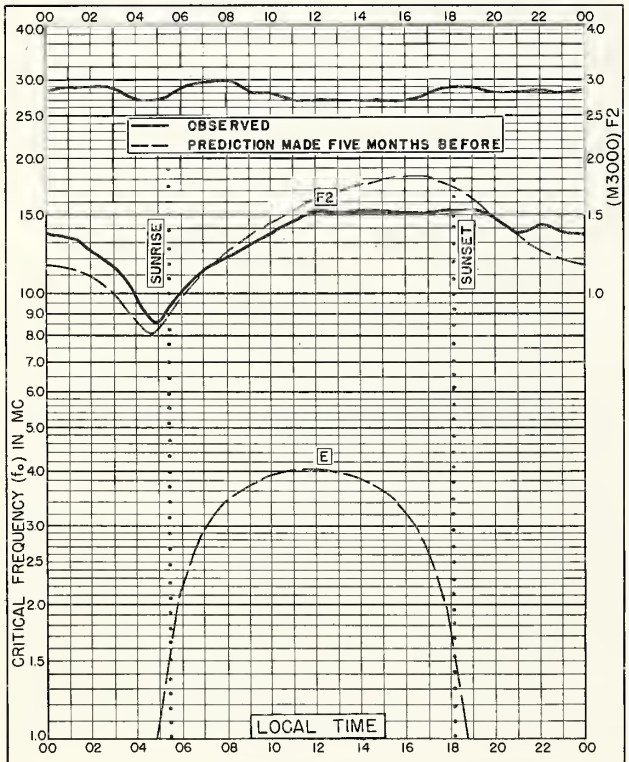
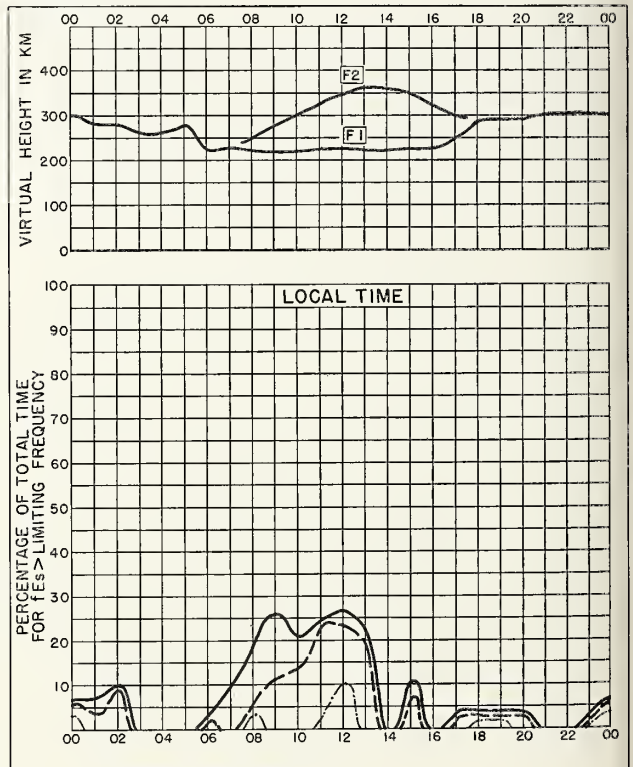


Fig. 63. BUENOS AIRES, ARGENTINA
34.5°S, 58.5° W OCTOBER 1956

NBS 503



OCTOBER 1956

Fig. 64. BUENOS AIRES, ARGENTINA

NBS 490

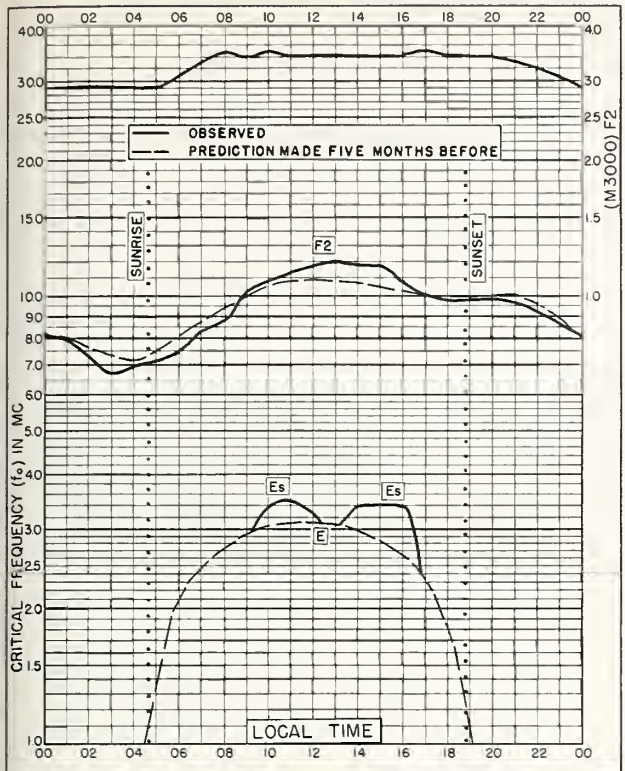


Fig. 65. DECEPCION I.
63.0°S, 60.7°W OCTOBER 1956

NBS 503

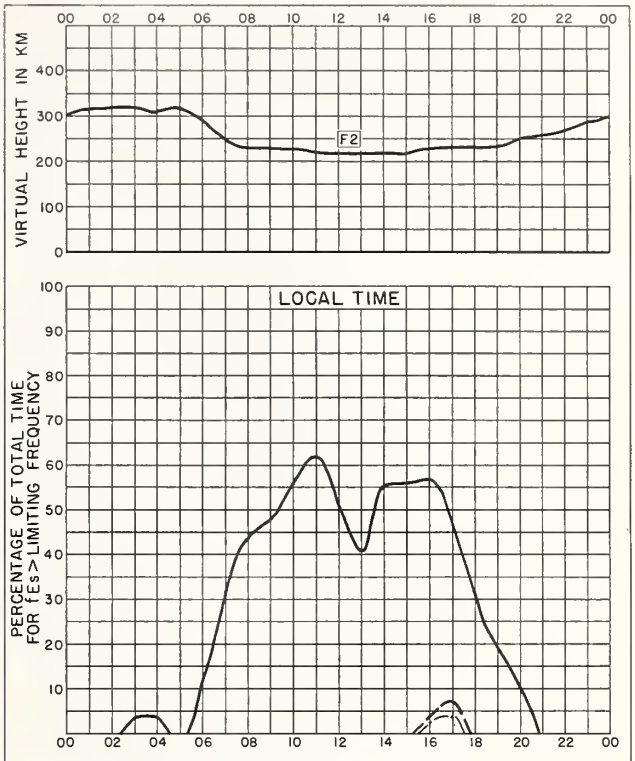


Fig. 66. DECEPCION I. OCTOBER 1956

NBS 490

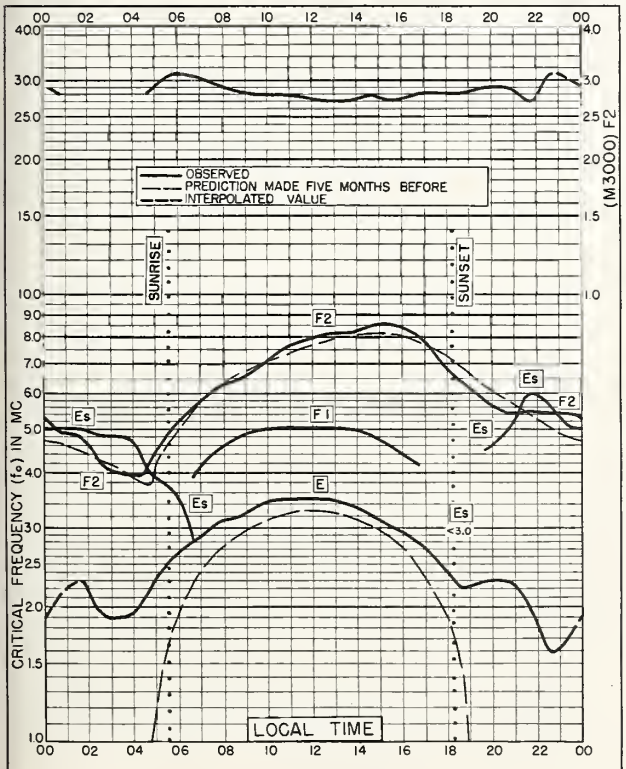


Fig. 67. CHURCHILL, CANADA
58.8°N, 94.2°W SEPTEMBER 1956

NBS 503

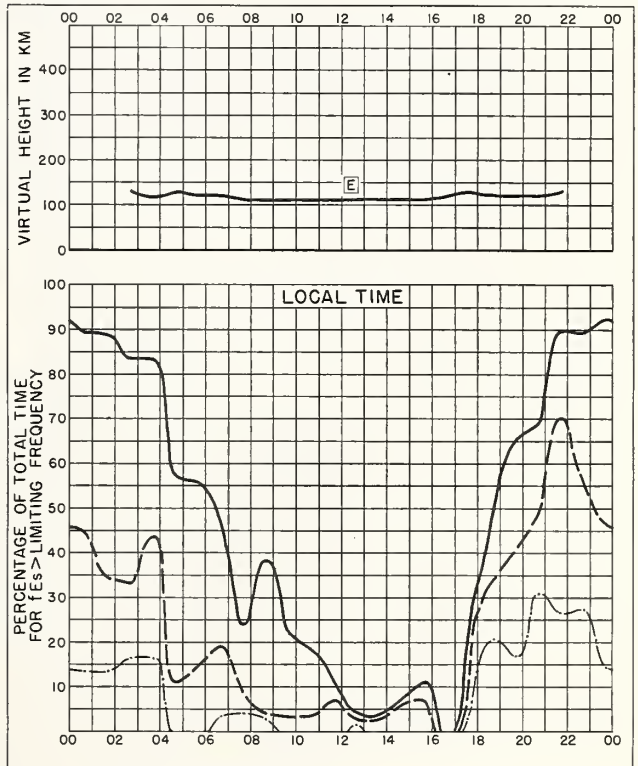


Fig. 68. CHURCHILL, CANADA SEPTEMBER 1956

NBS 490

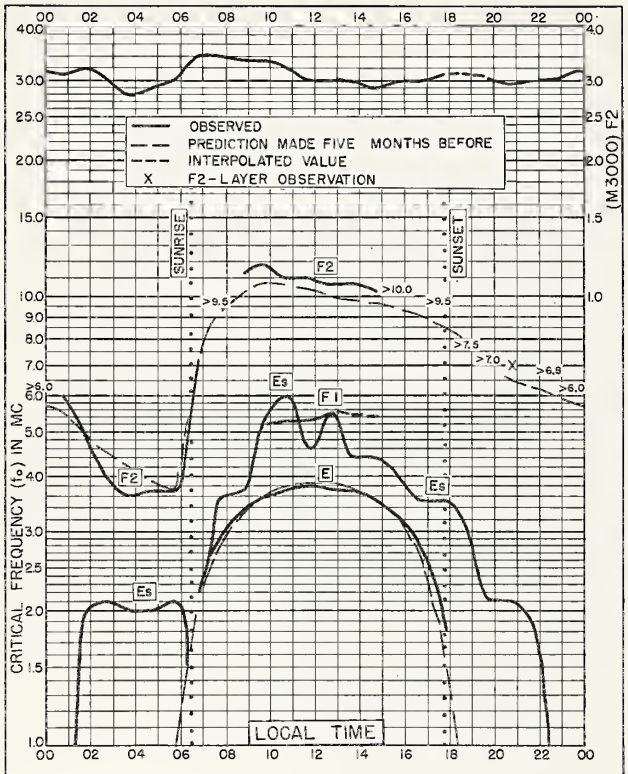


Fig. 69. TOWNSVILLE, AUSTRALIA
19.3°S, 146.7°E AUGUST 1956

NBS 503

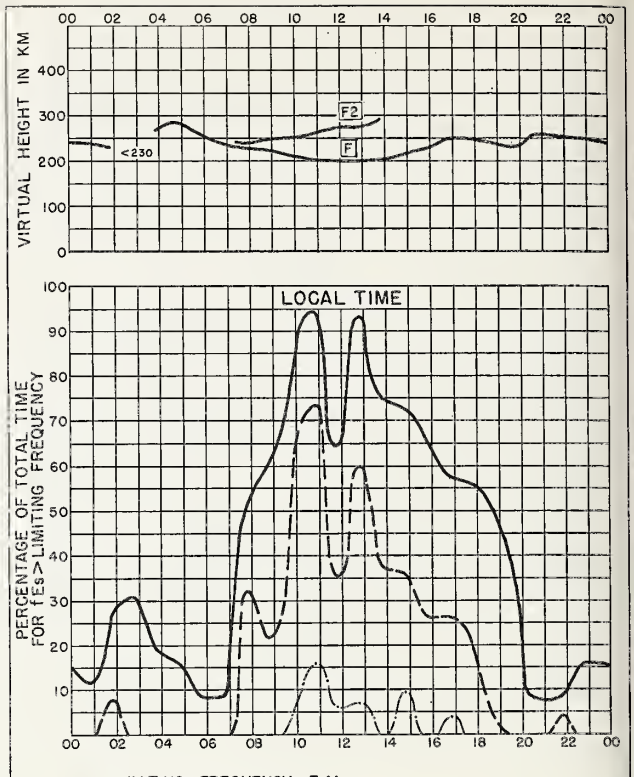


Fig. 70. TOWNSVILLE, AUSTRALIA AUGUST 1956

NBS 490

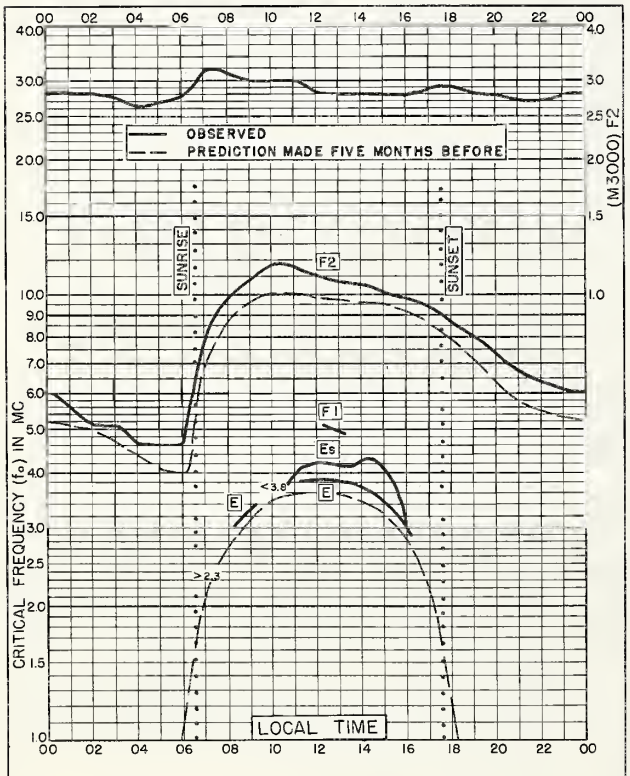


Fig. 71. BRISBANE, AUSTRALIA
27.5°S, 153.0°E AUGUST 1956

NBS 503

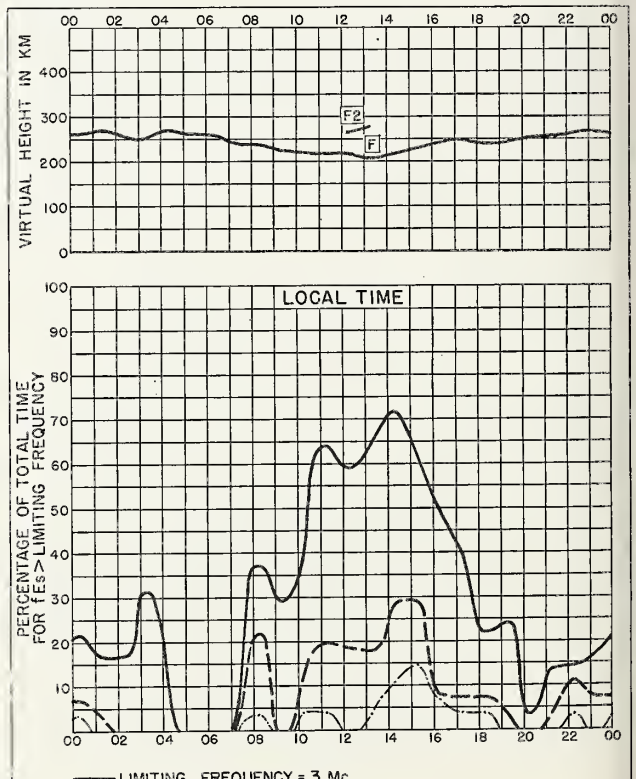


Fig. 72. BRISBANE, AUSTRALIA AUGUST 1956

NBS 490

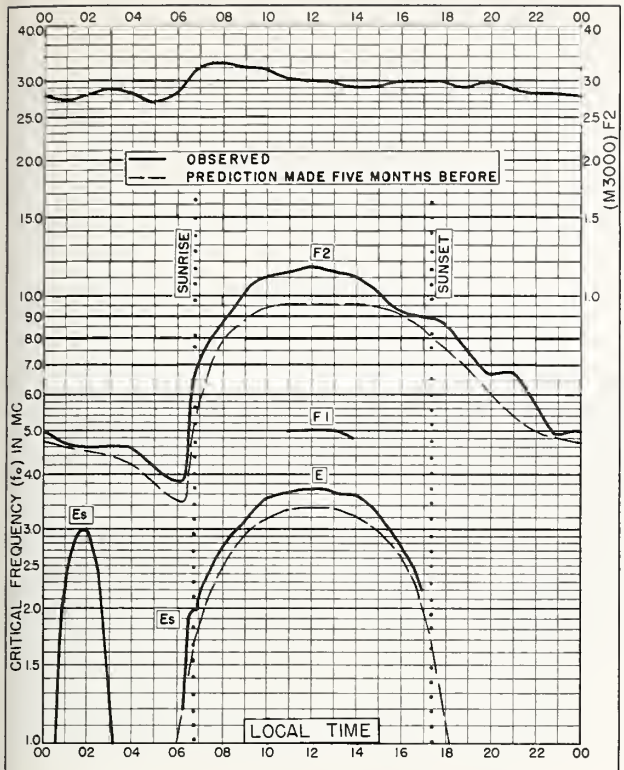


Fig. 73. CANBERRA, AUSTRALIA
35.3°S, 149.0°E AUGUST 1956

NBS 503

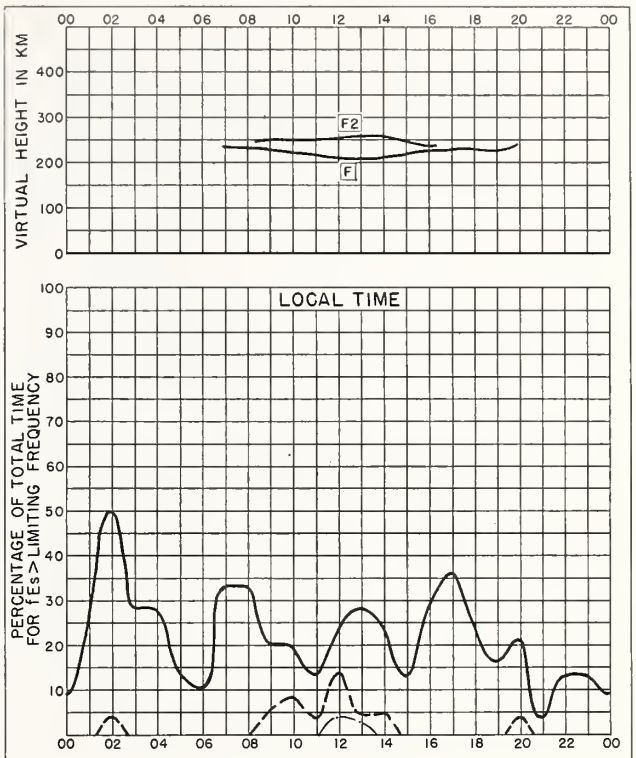


Fig. 74. CANBERRA, AUSTRALIA AUGUST 1956

NBS 490

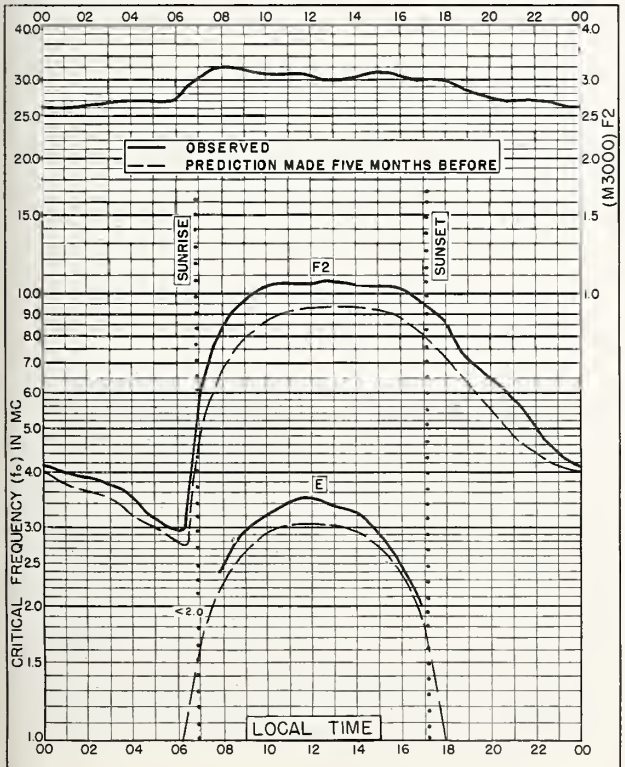


Fig. 75. HOBART, TASMANIA
42.9°S, 147.2°E AUGUST 1956

NBS 503

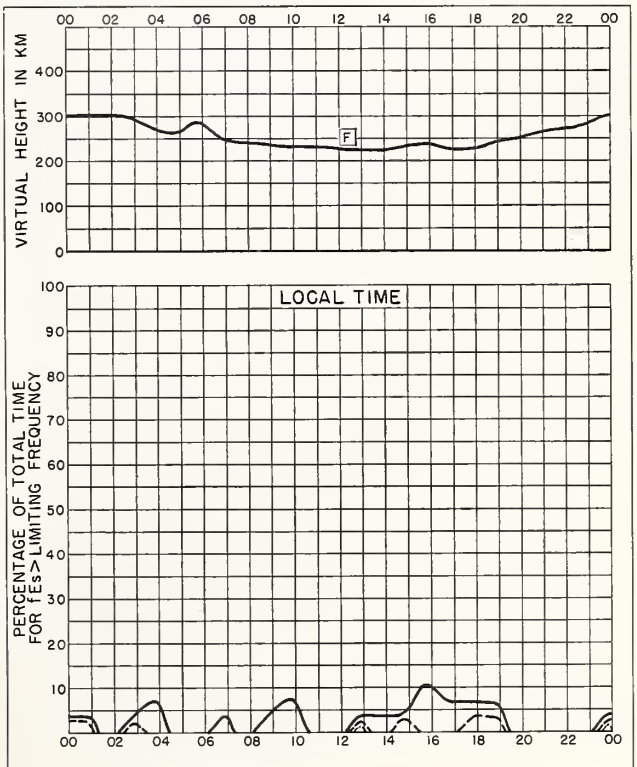


Fig. 76. HOBART, TASMANIA AUGUST 1956

NBS 490

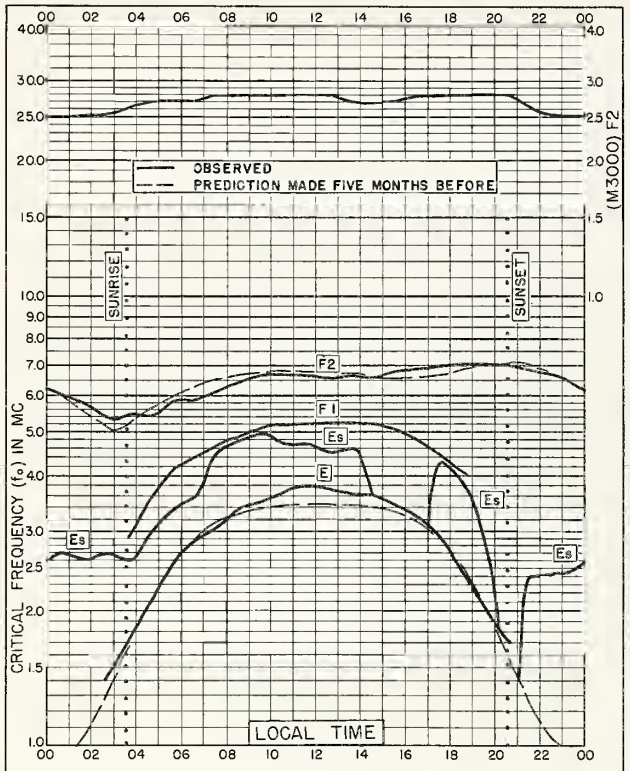


Fig. 77. INVERNESS, SCOTLAND
57.4°N, 4.2°W JULY 1956

NBS 503

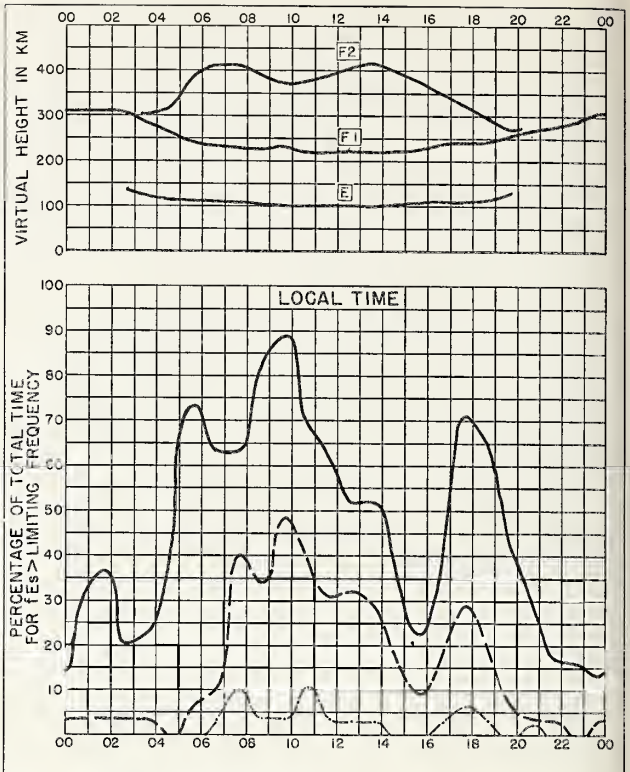


Fig. 78. INVERNESS, SCOTLAND JULY 1956

NBS 490

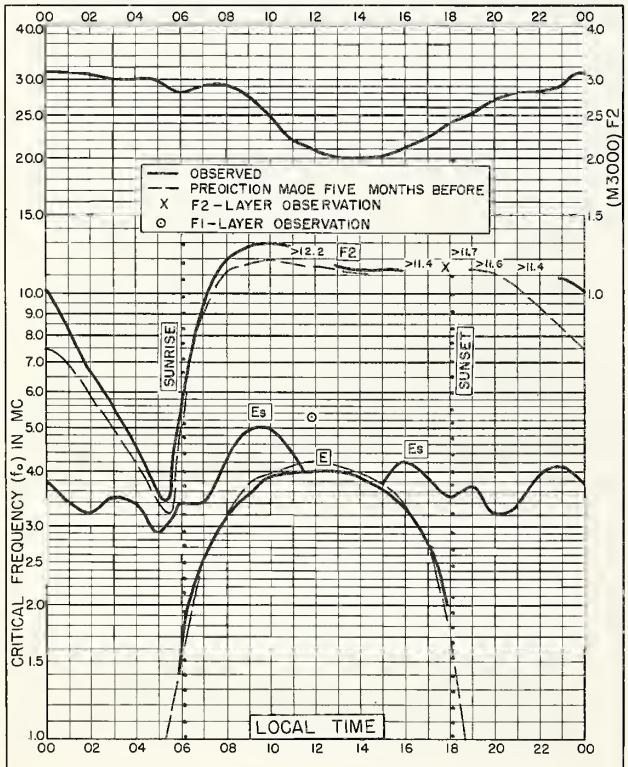


Fig. 79. SINGAPORE, BRITISH MALAYA
1.3°N, 103.8°E JULY 1956

NBS 503

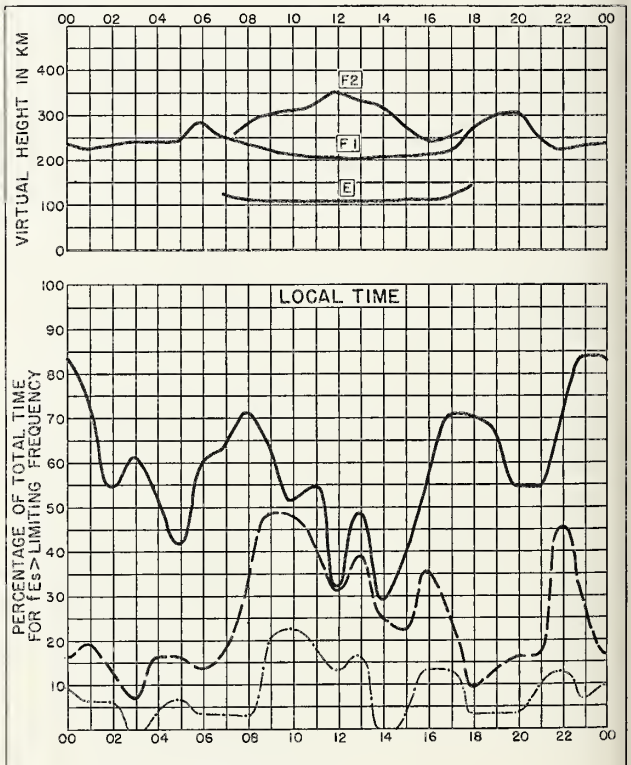


Fig. 80. SINGAPORE, BRITISH MALAYA JULY 1956

NBS 490

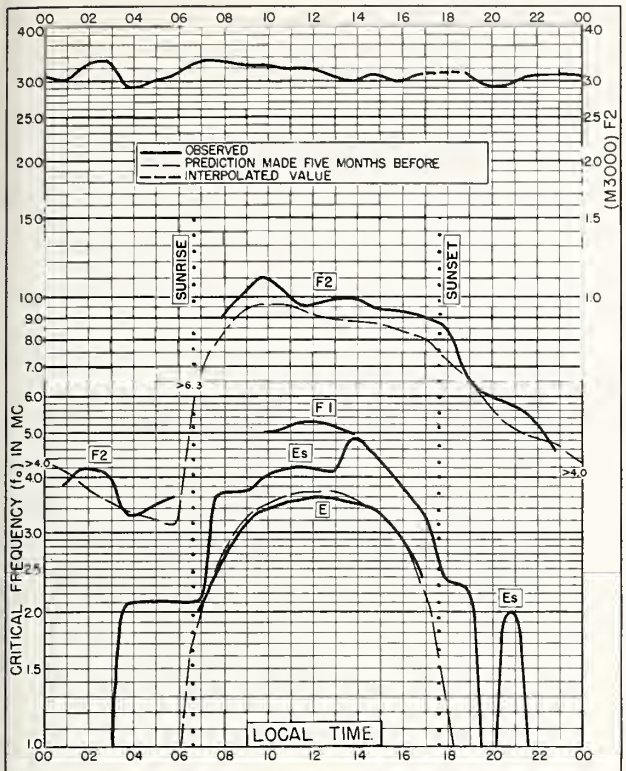


Fig. 81. TOWNSVILLE, AUSTRALIA
19.3°S, 146.7°E JULY 1956

NBS 503

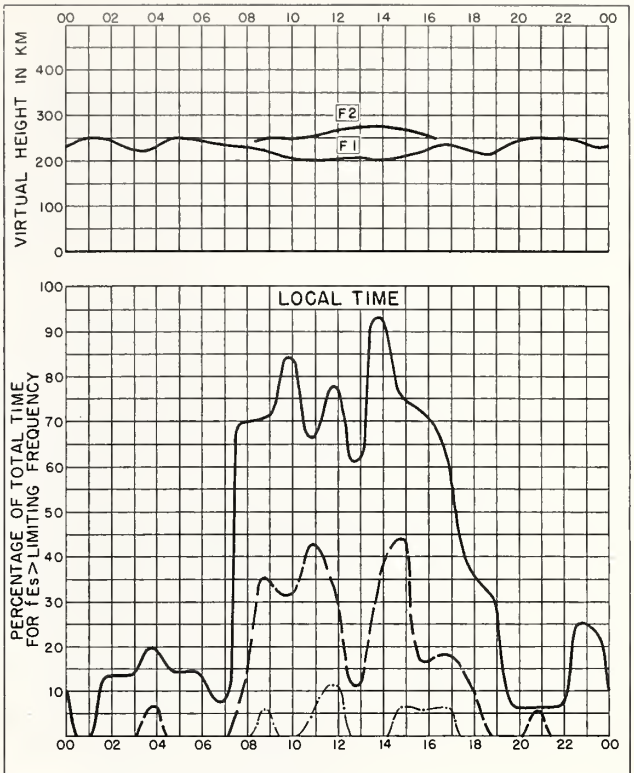


Fig. 82. TOWNSVILLE, AUSTRALIA JULY 1956

NBS 490

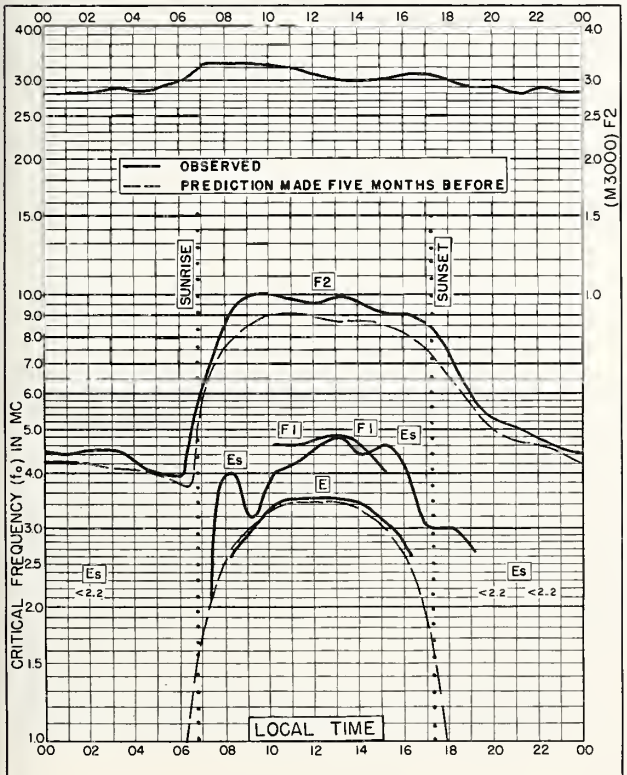


Fig. 83. BRISBANE, AUSTRALIA
27.5°S, 153.0°E JULY 1956

NBS 503

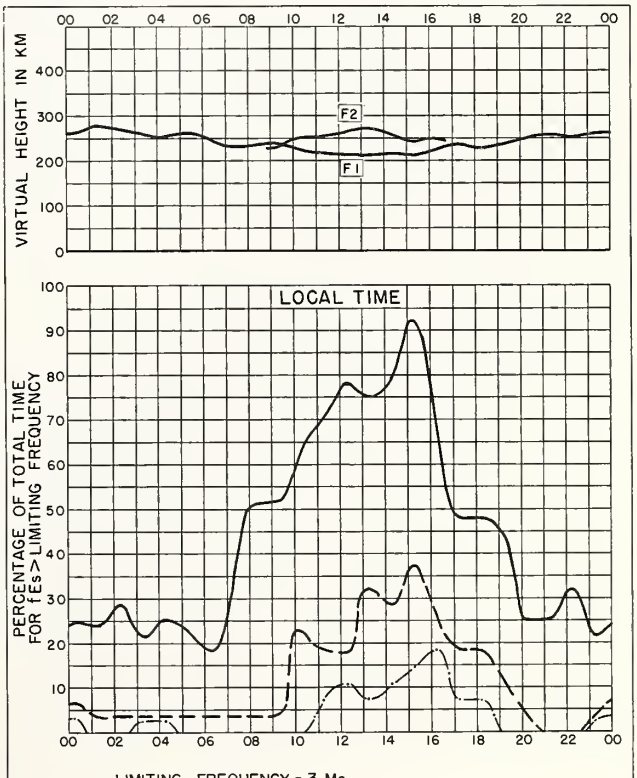


Fig. 84. BRISBANE, AUSTRALIA JULY 1956

NBS 490

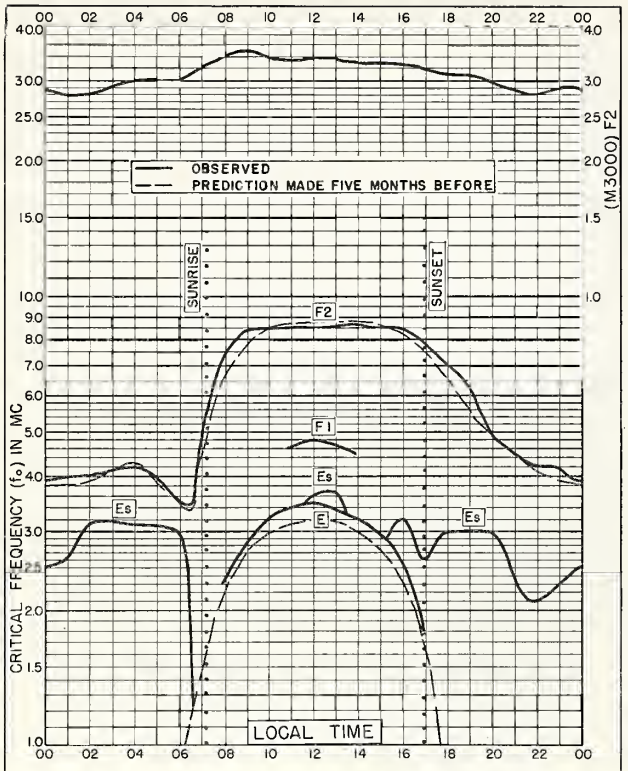


Fig. 85. CANBERRA, AUSTRALIA
35.3°S, 149.0°E JULY 1956

NBS 503

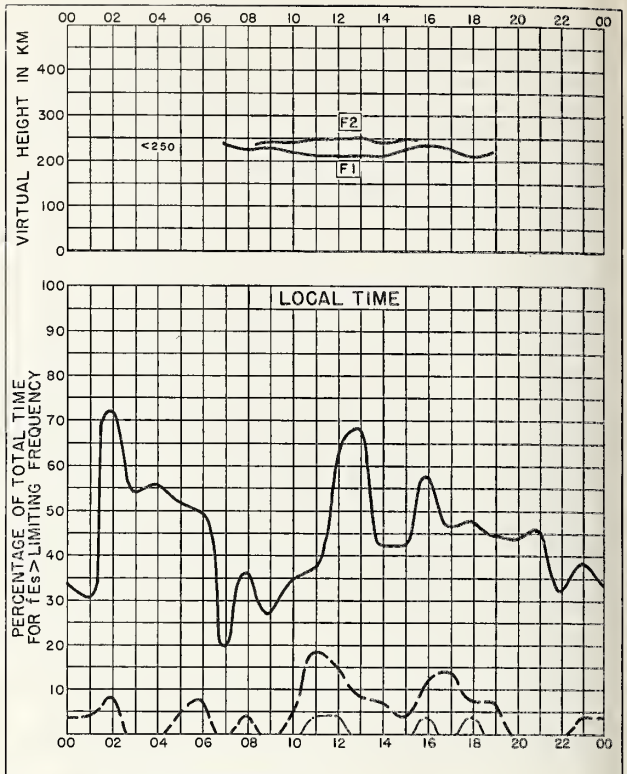


Fig. 86. CANBERRA, AUSTRALIA JULY 1956

NBS 490

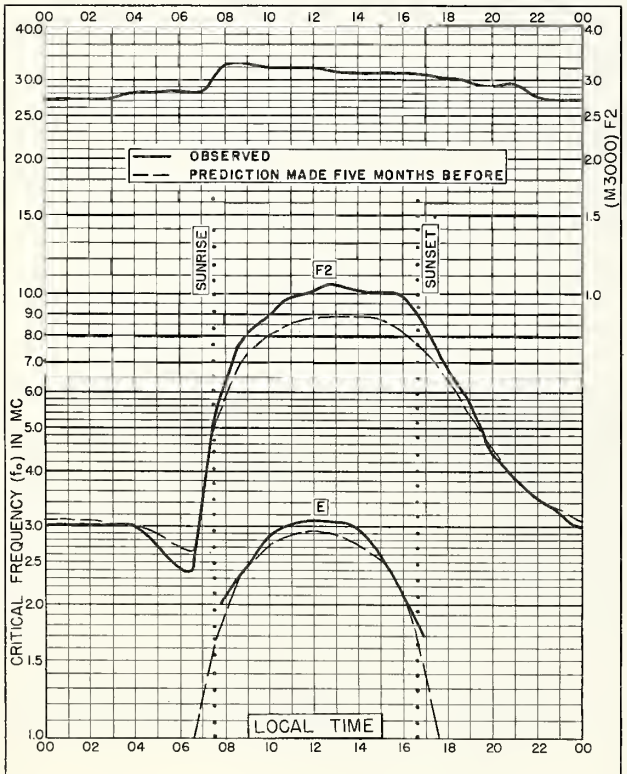


Fig. 87. HOBART, TASMANIA
42.9°S, 147.2°E JULY 1956

NBS 503

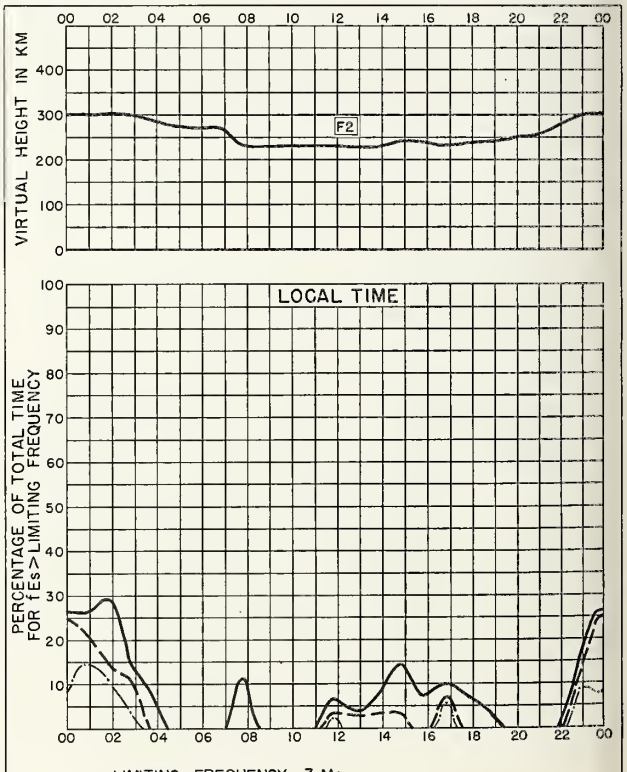


Fig. 88. HOBART, TASMANIA JULY 1956

NBS 490

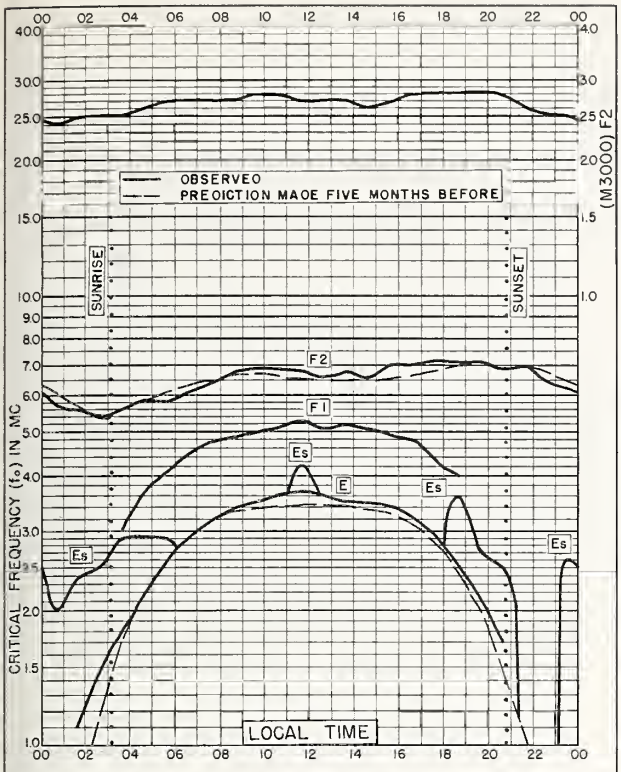


Fig. 89. INVERNESS, SCOTLAND
57.4°N, 4.2°W JUNE 1956

NBS 503

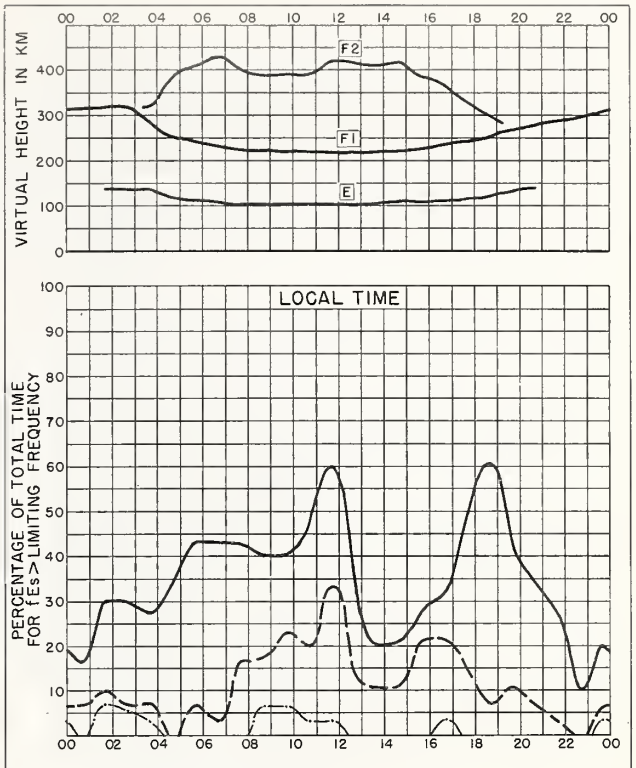


Fig. 90. INVERNESS, SCOTLAND JUNE 1956

NBS 490

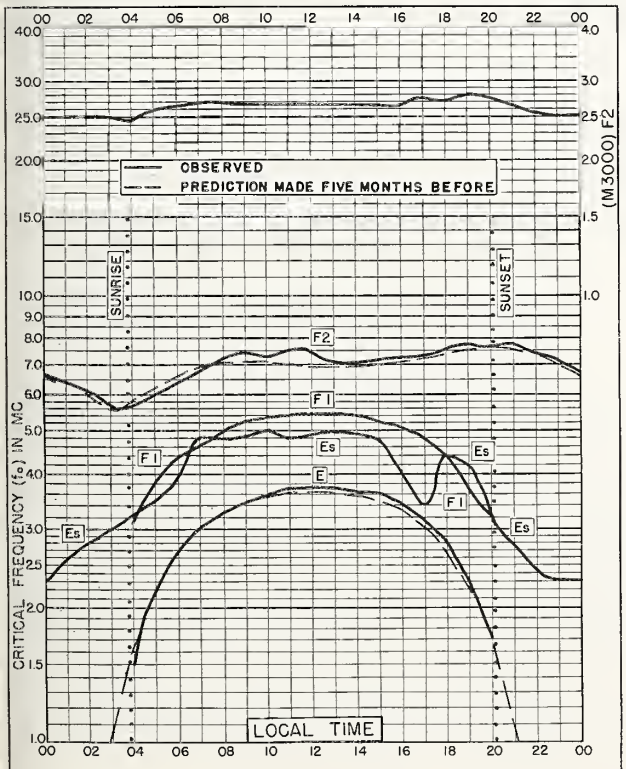


Fig. 91. SLOUGH, ENGLAND
51.5°N, 0.6°W JUNE 1956

NBS 503

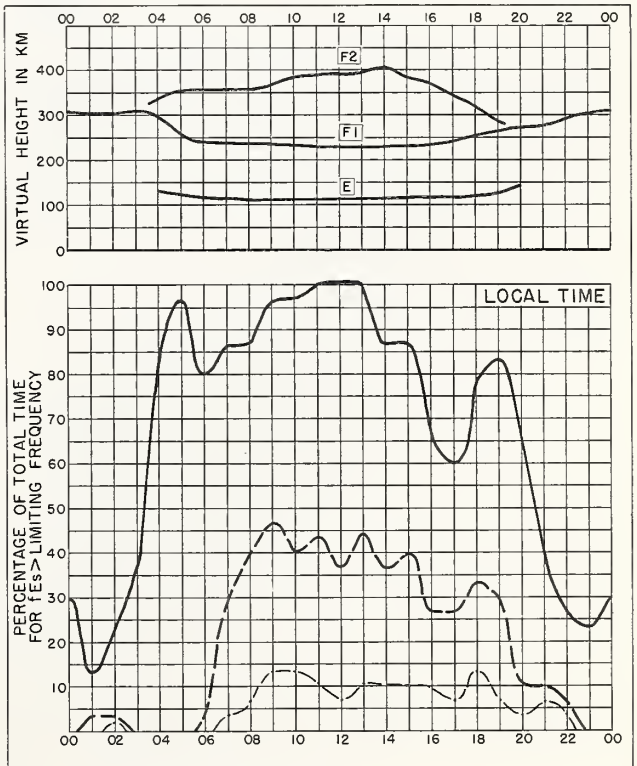


Fig. 92. SLOUGH, ENGLAND JUNE 1956

NBS 490

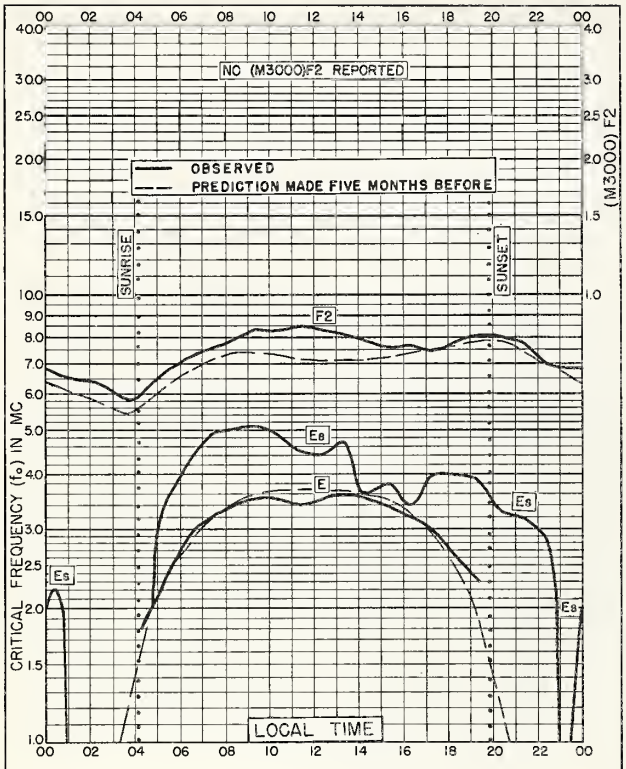


Fig. 93. BUDAPEST, HUNGARY
47.6°N, 19.0°E JUNE 1956

NBS 503

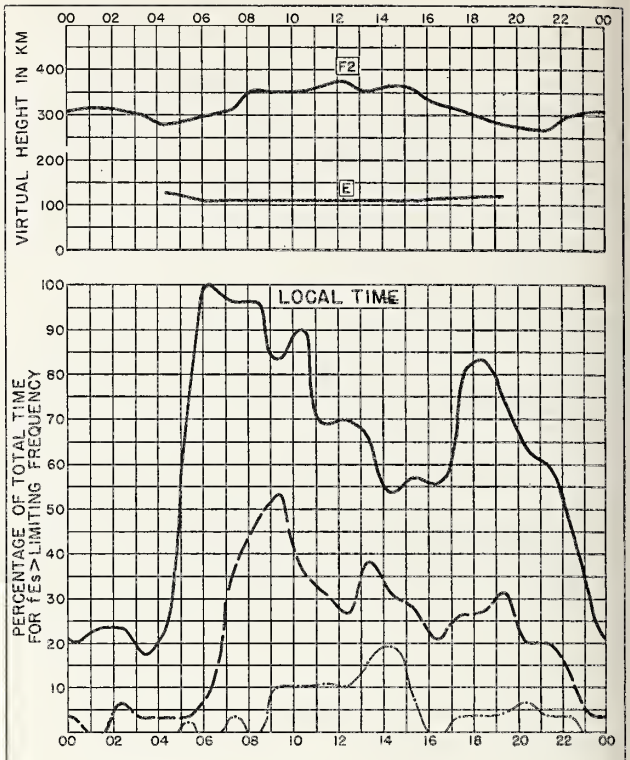


Fig. 94. BUDAPEST, HUNGARY JUNE 1956

NBS 490

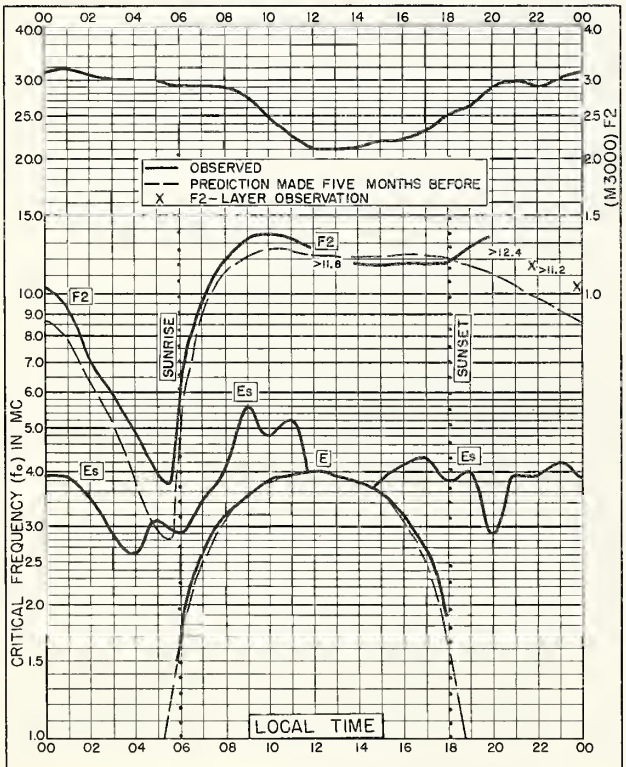


Fig. 95. SINGAPORE, BRITISH MALAYA
1.3°N, 103.8°E JUNE 1956

NBS 503

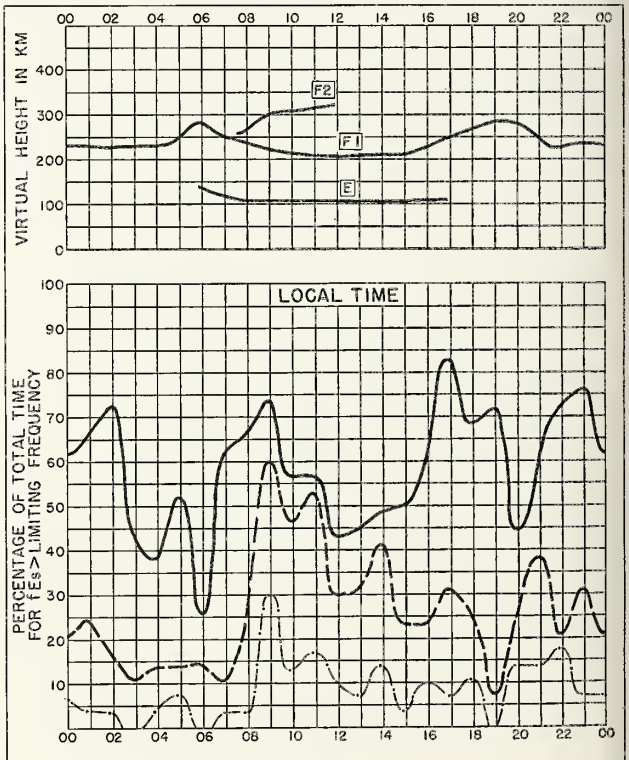


Fig. 96. SINGAPORE, BRITISH MALAYA JUNE 1956

NBS 490

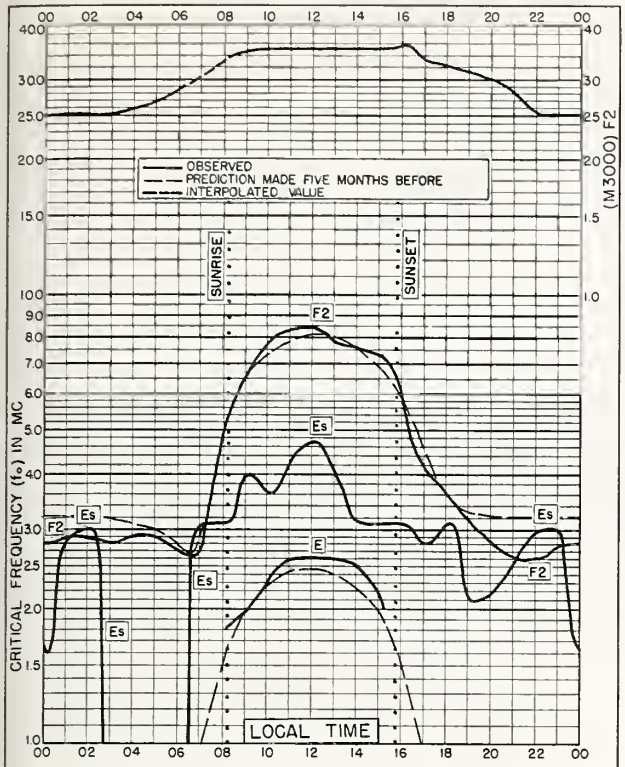


Fig. 97. FALKLAND IS.
51.7°S, 57.8°W JUNE 1956

NBS 503

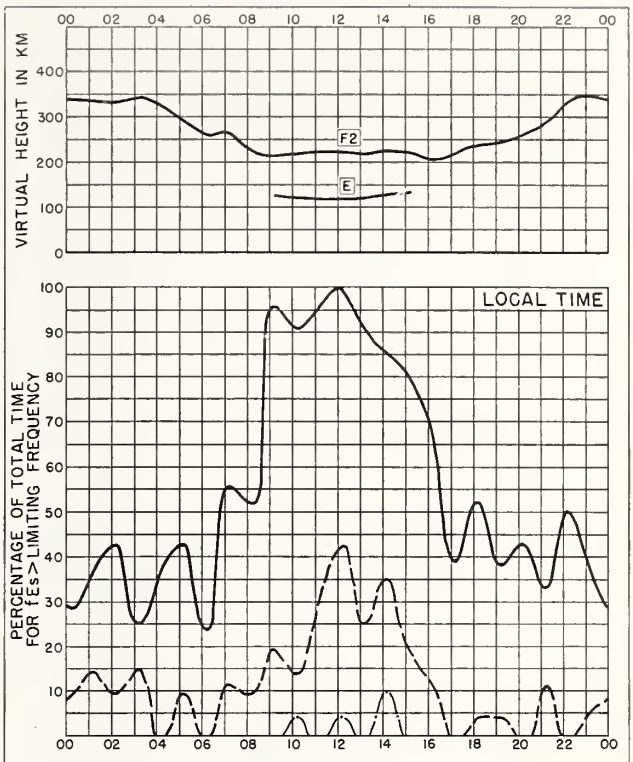


Fig. 98. FALKLAND IS. JUNE 1956

NBS 490

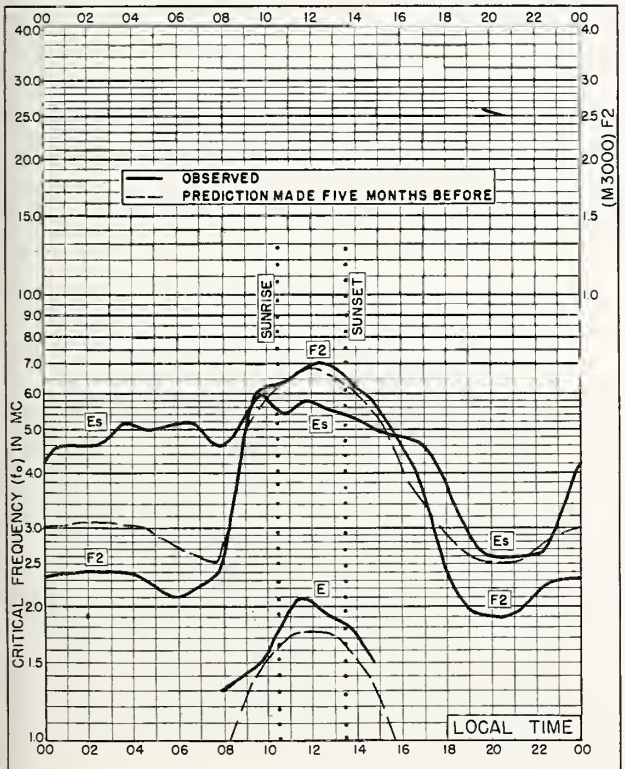


Fig. 99. PORT LOCKROY
64.8°S, 63.5°W JUNE 1956

NBS 503

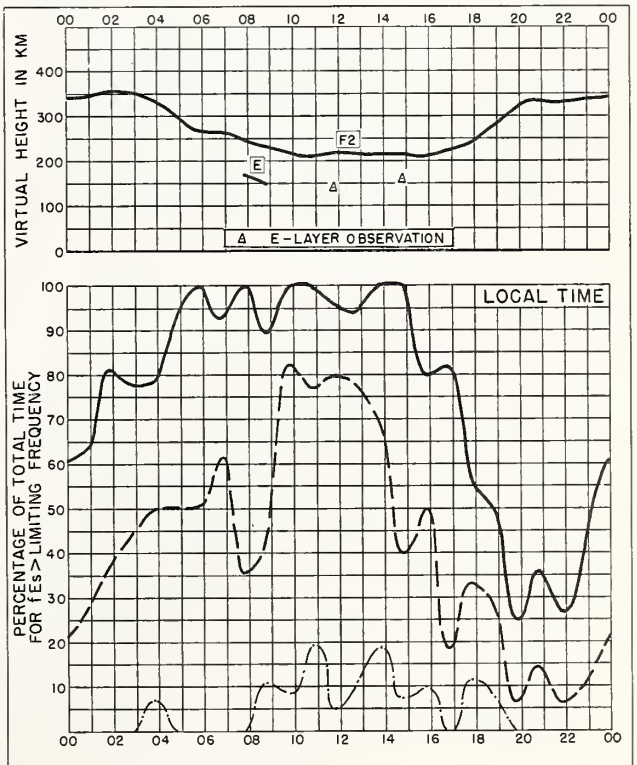


Fig. 100. PORT LOCKROY JUNE 1956

NBS 490

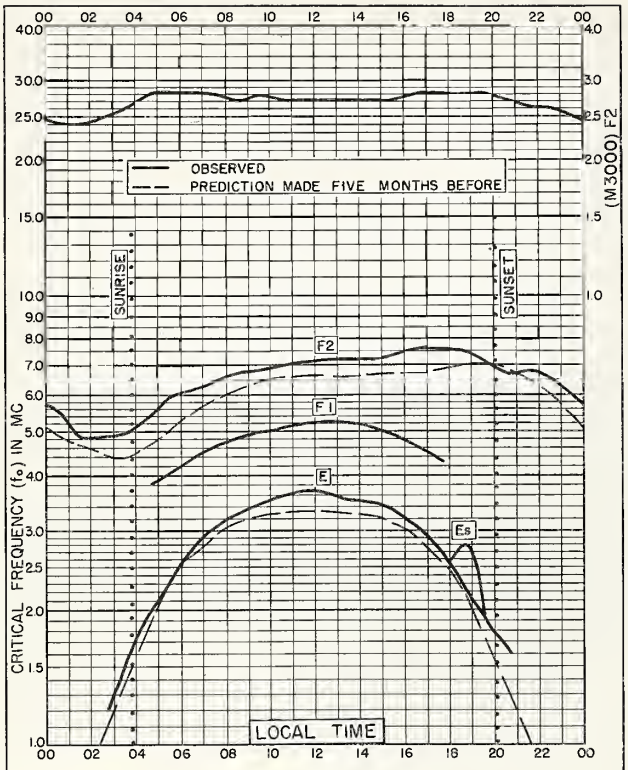


Fig. 101. INVERNESS, SCOTLAND
57.4°N, 4.2°W MAY 1956

NBS 503

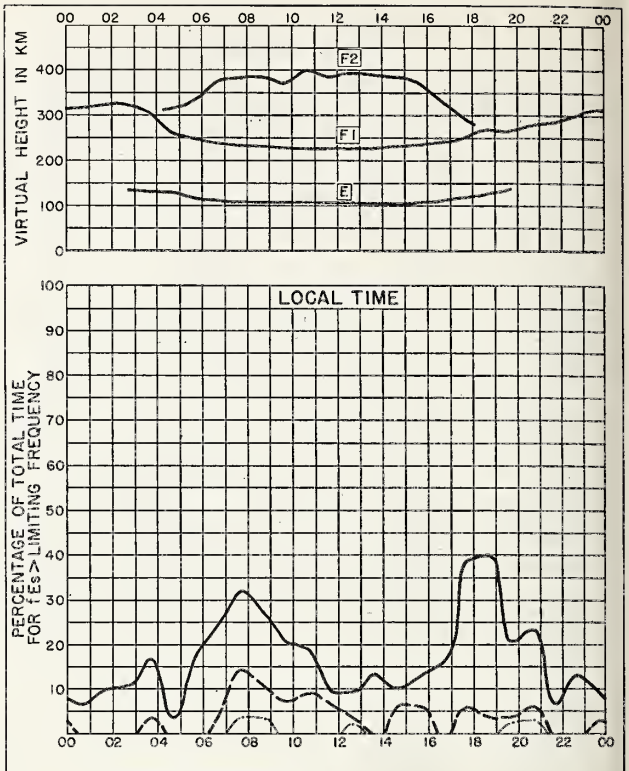


Fig. 102. INVERNESS, SCOTLAND MAY 1956

NBS 490

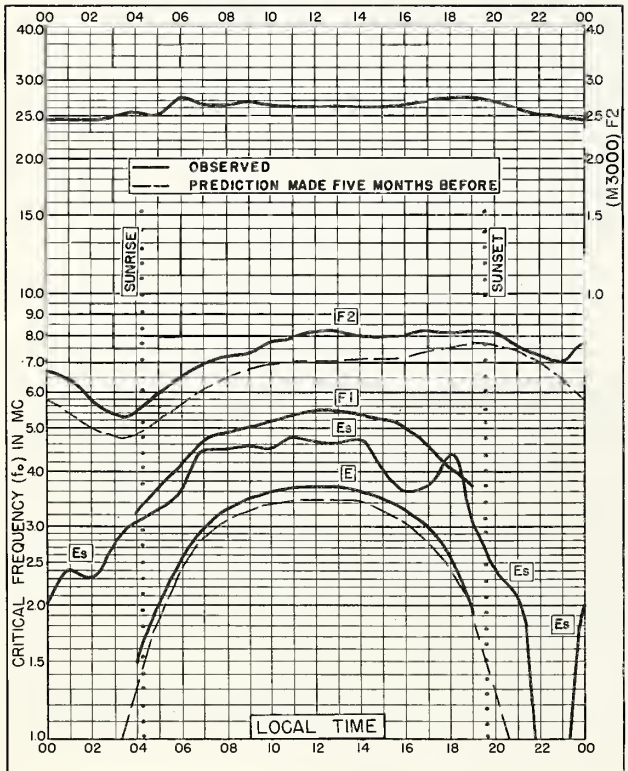


Fig. 103. SLOUGH, ENGLAND
51.5°N, 0.6°W MAY 1956

NBS 503

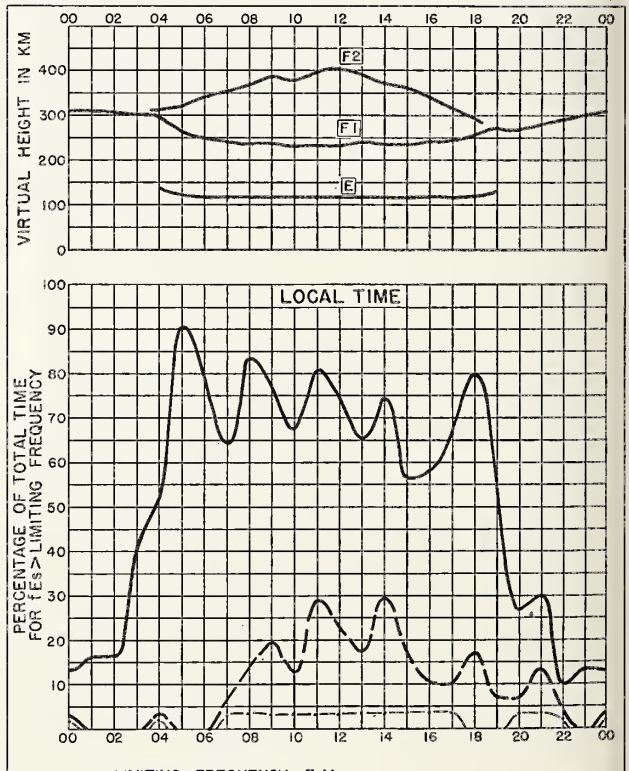


Fig. 104. SLOUGH, ENGLAND MAY 1956

NBS 490

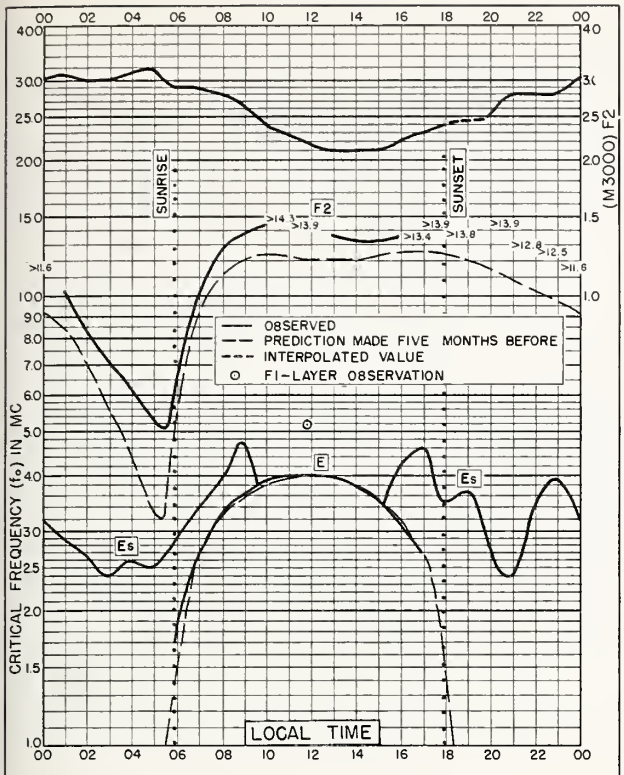


Fig. 105. SINGAPORE, BRITISH MALAYA
1.3°N, 103.8°E MAY 1956

NBS 503

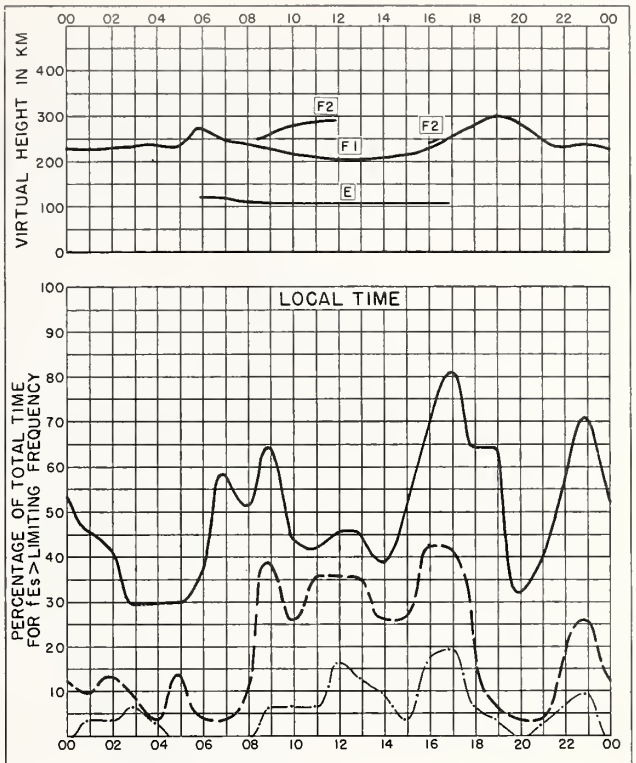


Fig. 106. SINGAPORE, BRITISH MALAYA MAY 1956

NBS 490

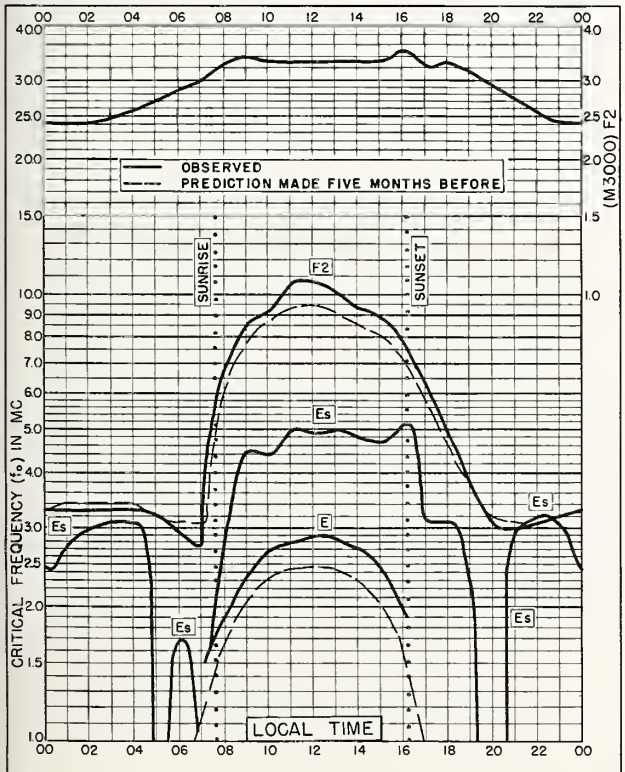


Fig. 107. FALKLAND IS.
51.7°S, 57.8°W MAY 1956

NBS 503

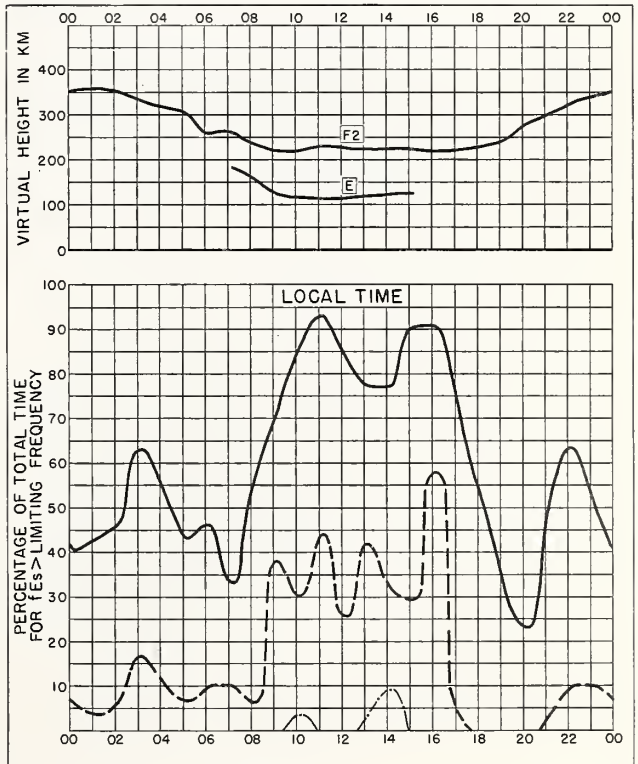


Fig. 108. FALKLAND IS. MAY 1956

NBS 490

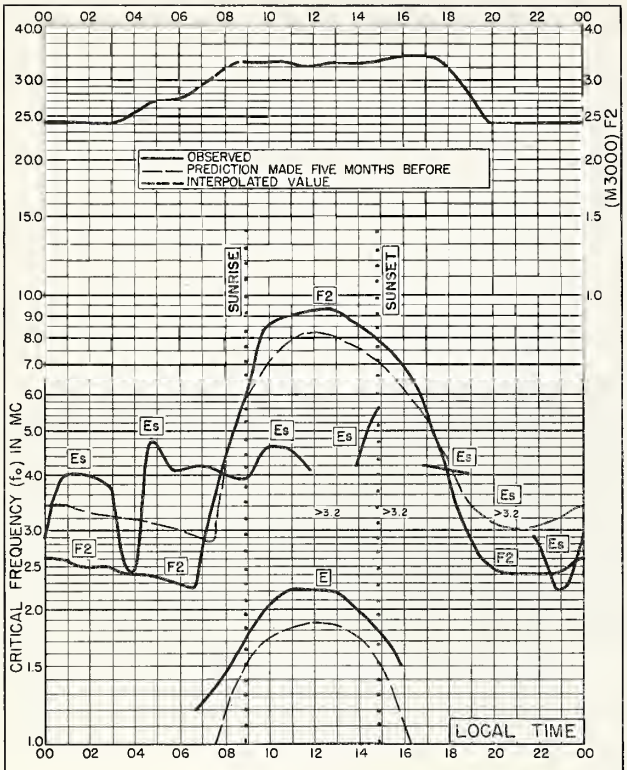


Fig. 109. PORT LOCKROY
64.8°S, 63.5°W MAY 1956

NBS 503

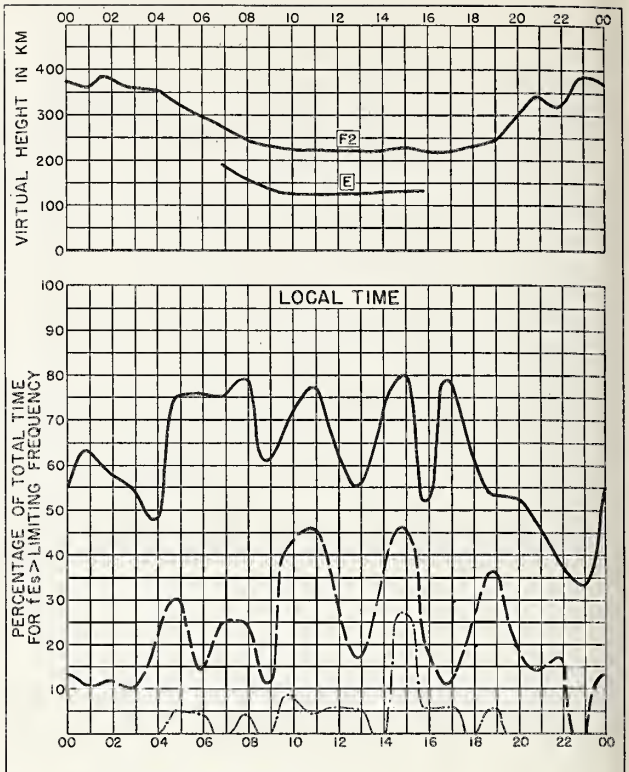


Fig. 110. PORT LOCKROY MAY 1956

NBS 490

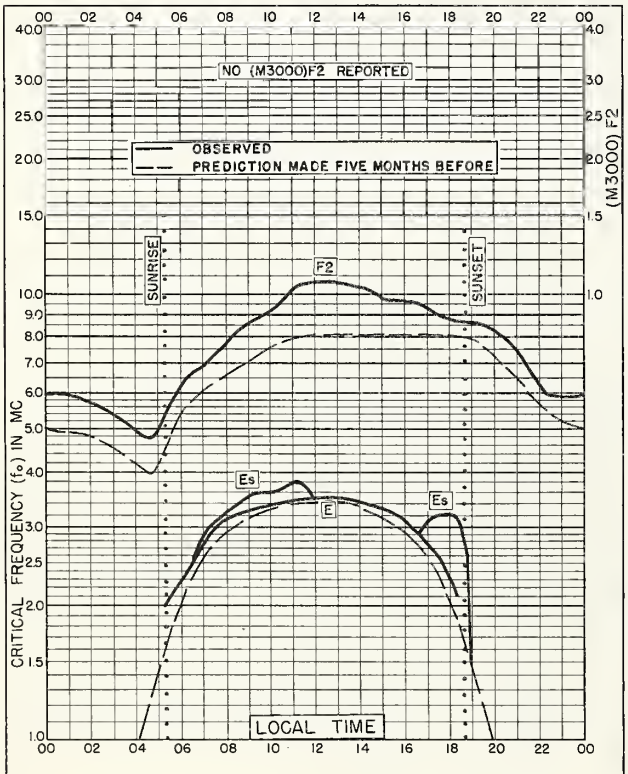


Fig. 111. BUDAPEST, HUNGARY
47.6°N, 19.0°E APRIL 1956

NBS 503

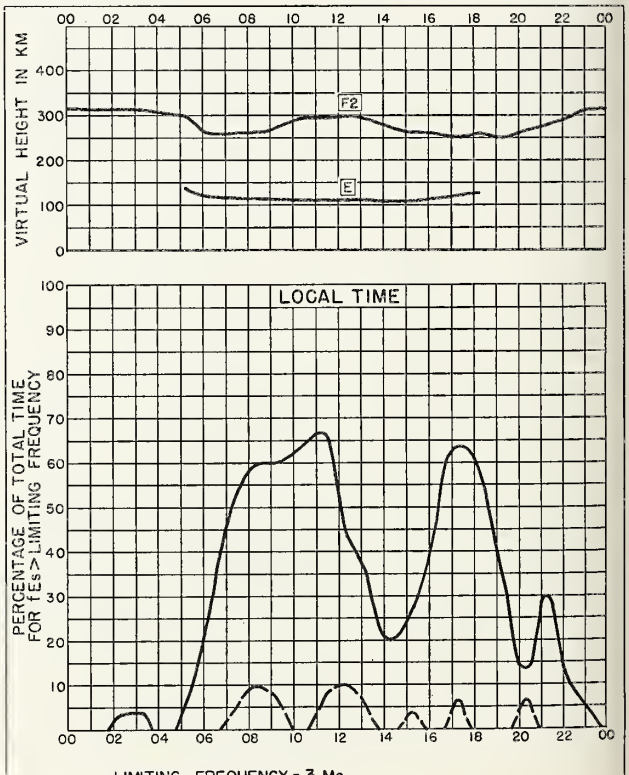


Fig. 112. BUDAPEST, HUNGARY APRIL 1956

NBS 490

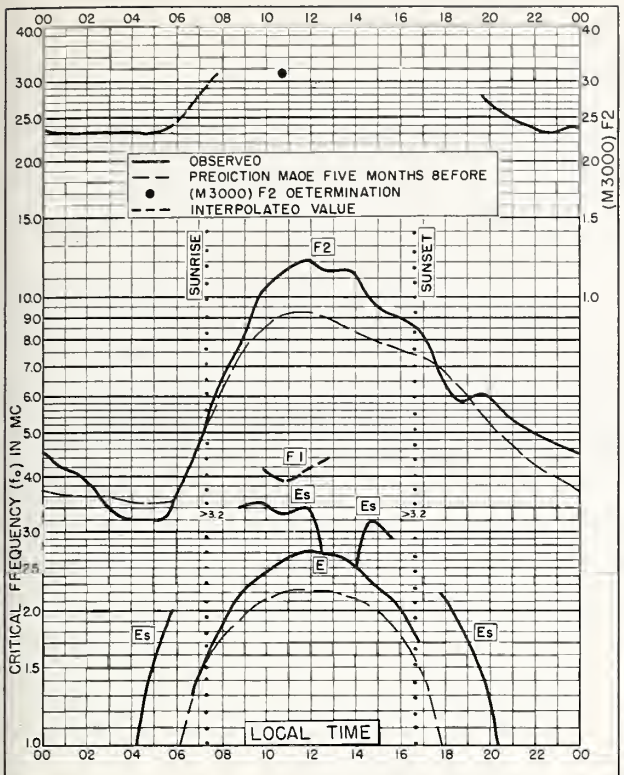


Fig. 113. PORT LOCKROY
64.8°S, 63.5°W APRIL 1956

NBS 503

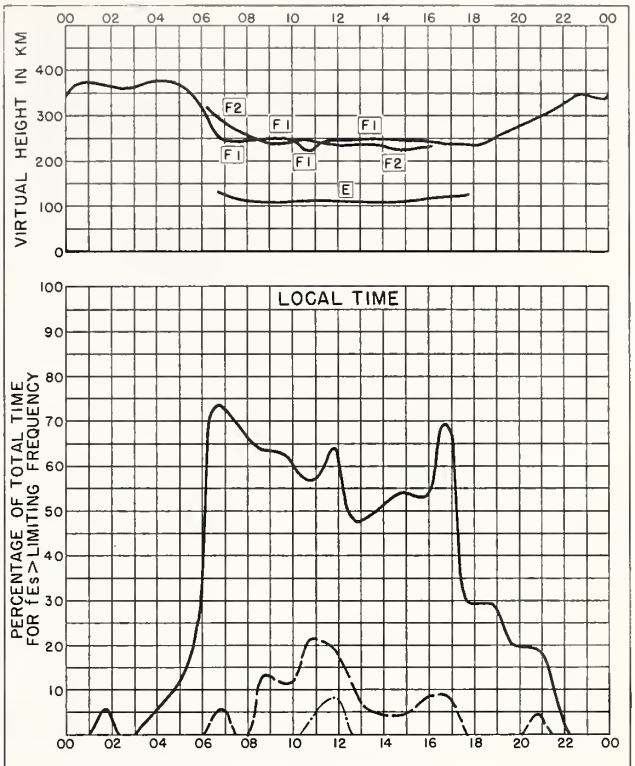


Fig. 114. PORT LOCKROY APRIL 1956

NBS 490

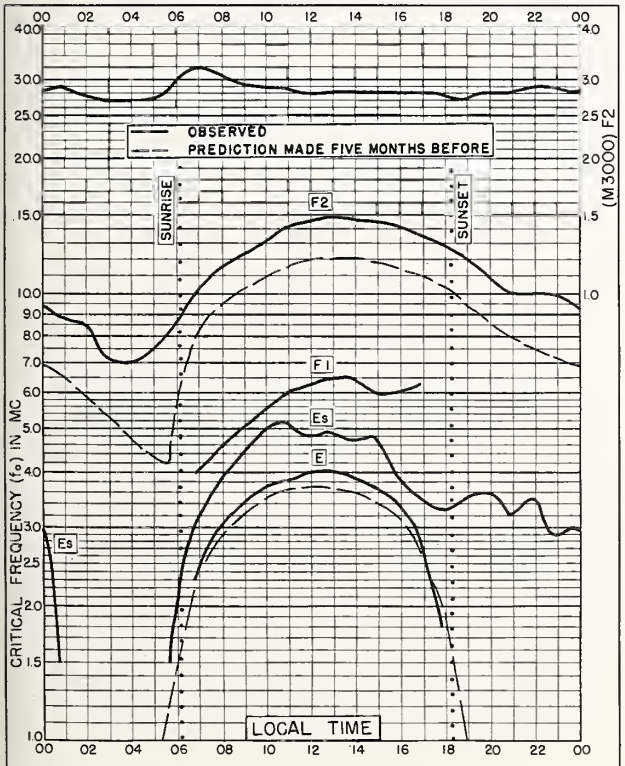


Fig. 115. RAROTONGA I.
21.3°S, 159.8°W MARCH 1956

NBS 503

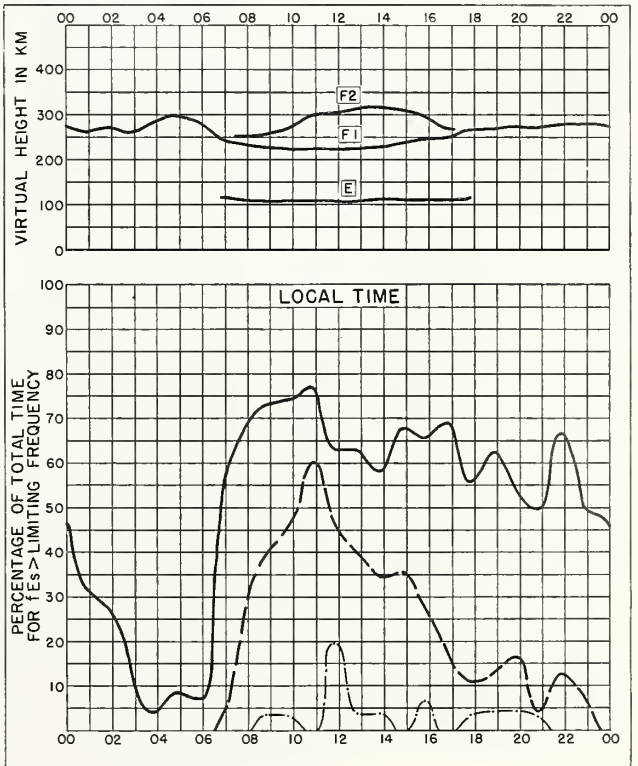


Fig. 116. RAROTONGA I. MARCH 1956

NBS 490

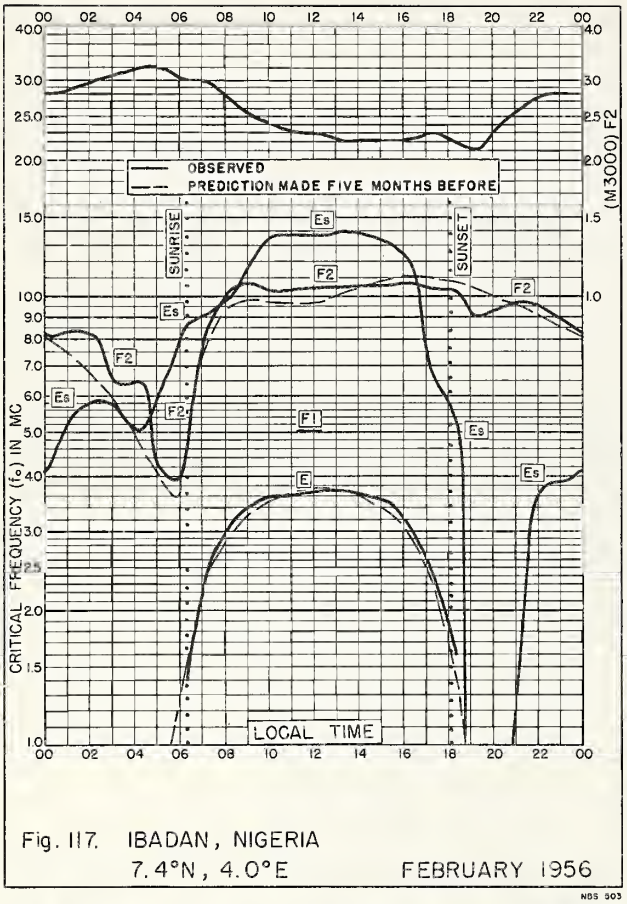


Fig. 117. IBADAN, NIGERIA
7.4°N, 4.0°E FEBRUARY 1956

NBS 503

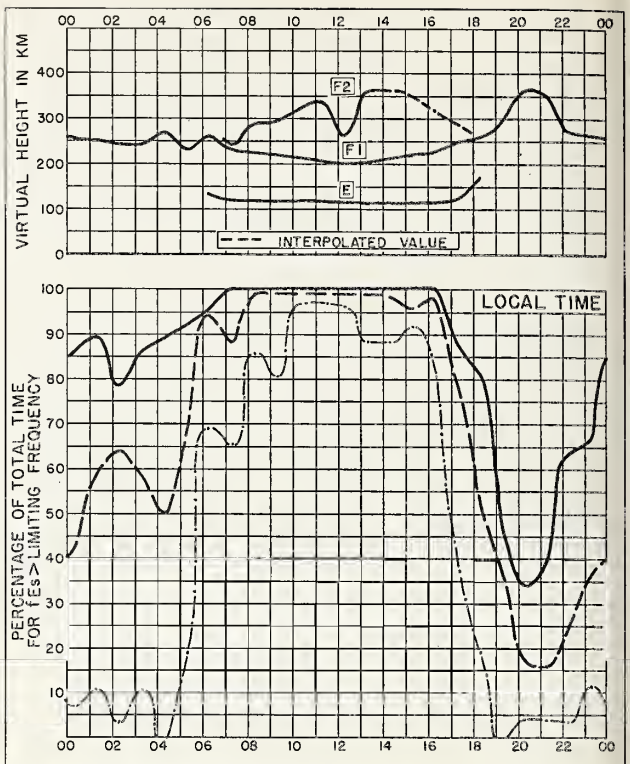


Fig. 118. IBADAN, NIGERIA FEBRUARY 1956

NBS 490

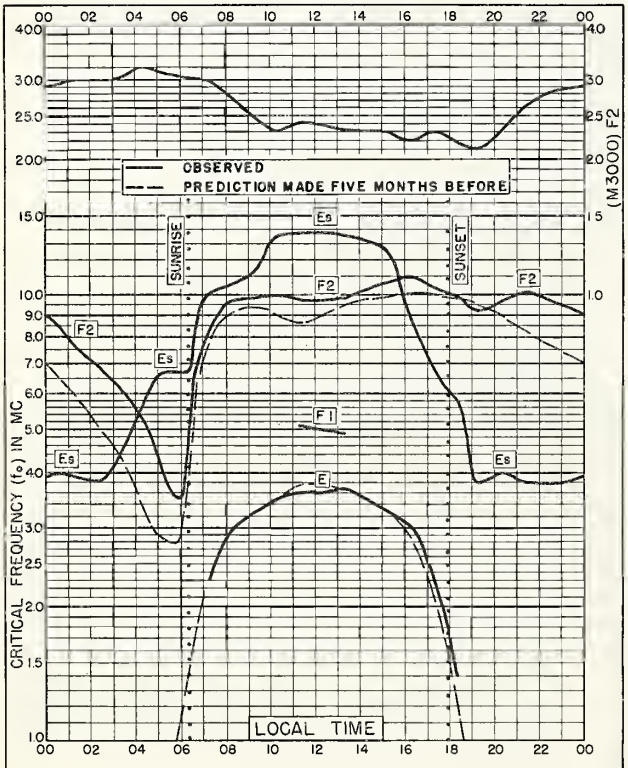


Fig. 119. IBADAN, NIGERIA
7.4°N, 4.0°E JANUARY 1956

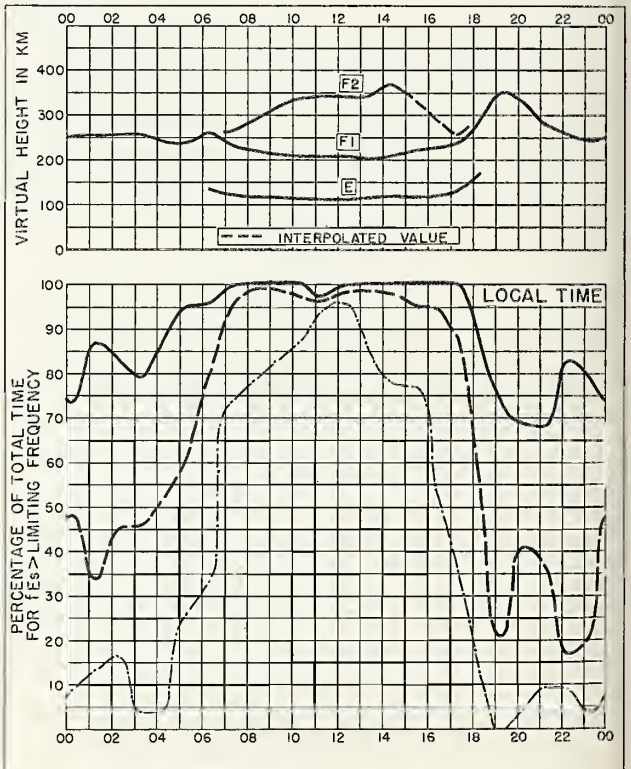


Fig. 120. IBADAN, NIGERIA JANUARY 1956

NBS 490

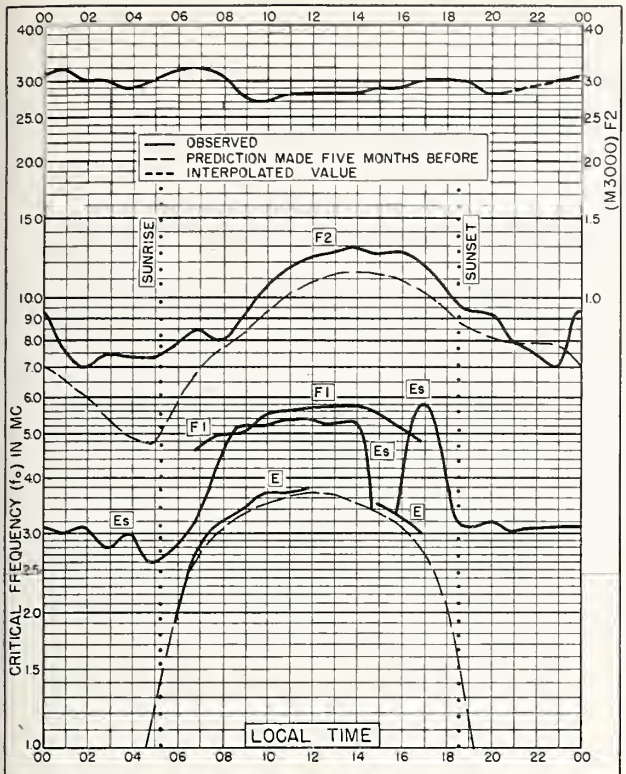


Fig. 121. RAROTONGA I.
21.3° S, 159.8° W DECEMBER 1955

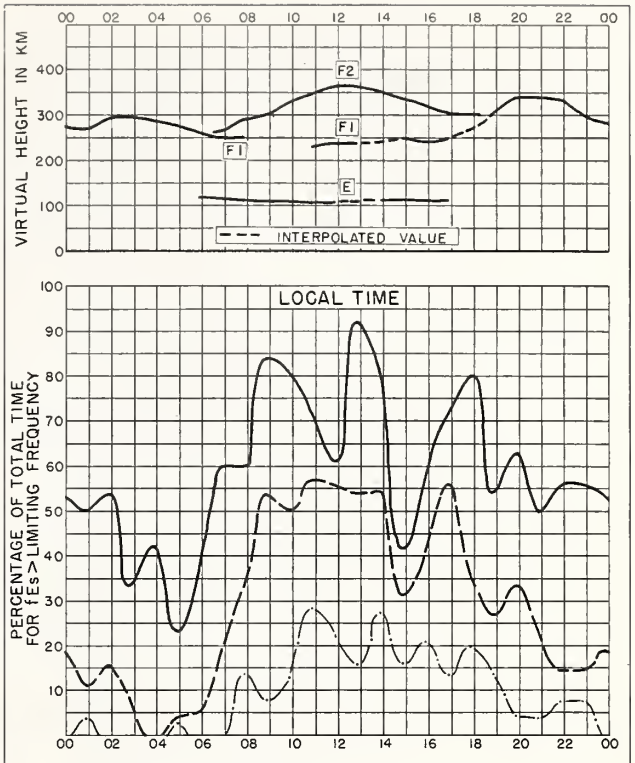


Fig. 122. RAROTONGA I. DECEMBER 1955

NBS 490

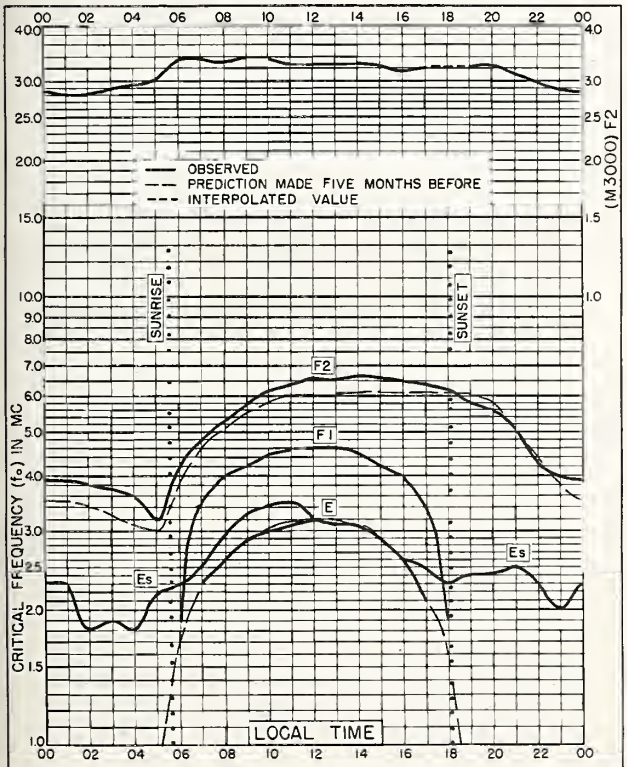


Fig. 123. POITIERS, FRANCE
46.6° N, 0.3° E SEPTEMBER 1955

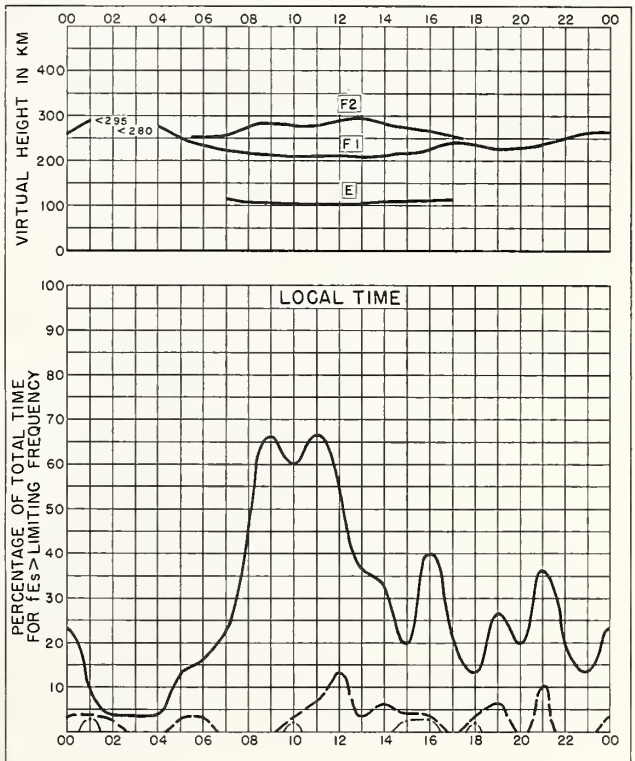


Fig. 124. POITIERS, FRANCE SEPTEMBER 1955

NBS 490

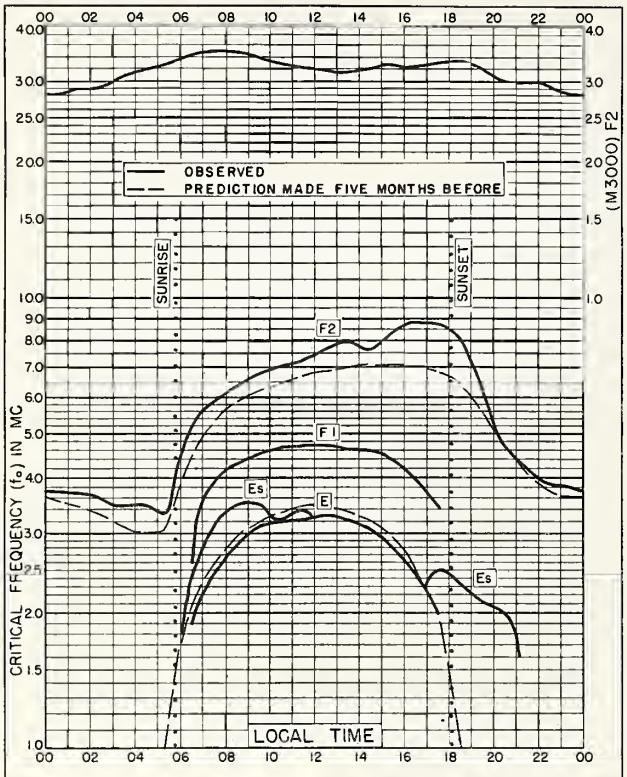
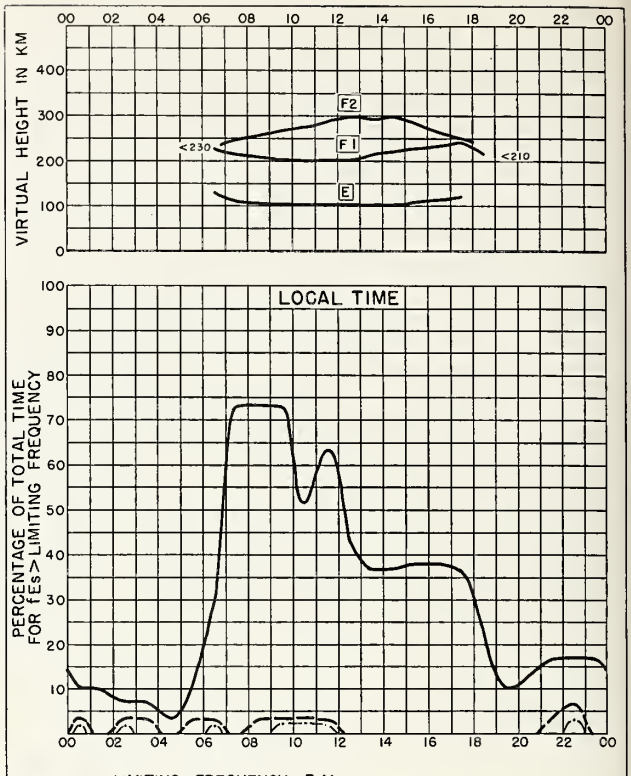


Fig. 125. CASABLANCA, MOROCCO
33.6°N, 7.6°W SEPTEMBER 1955



SEPTEMBER 1955

Fig. 126. CASABLANCA, MOROCCO

NBS 490

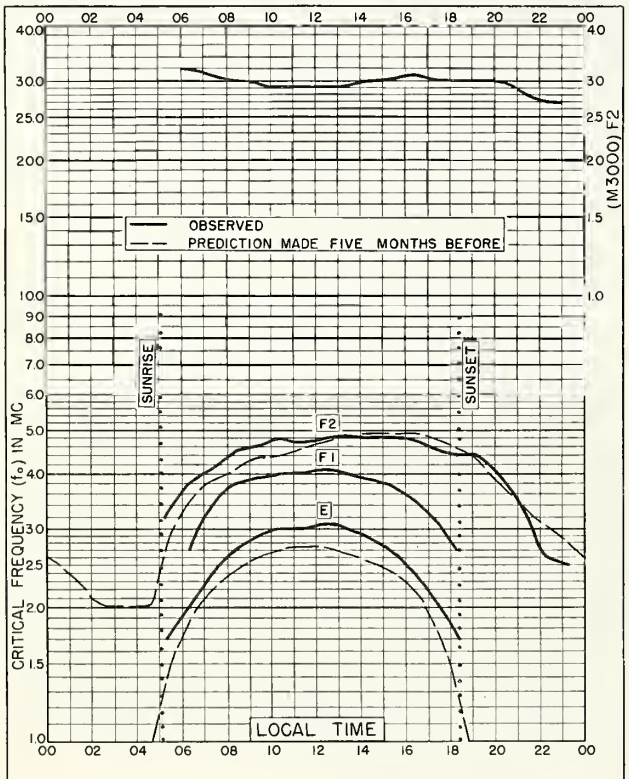


Fig. 127. CAMPBELL I.
52.5°S, 169.2°E OCTOBER 1954

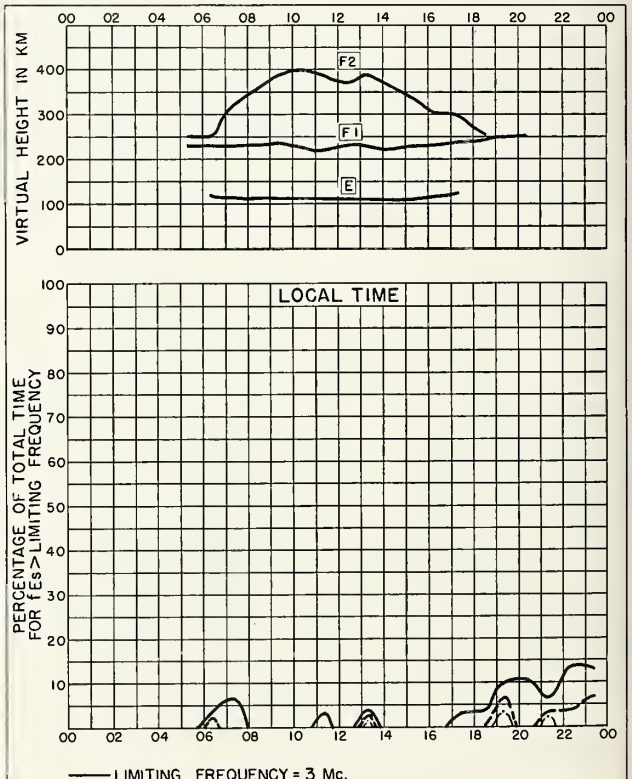


Fig. 128. CAMPBELL I. OCTOBER 1954

NBS 490

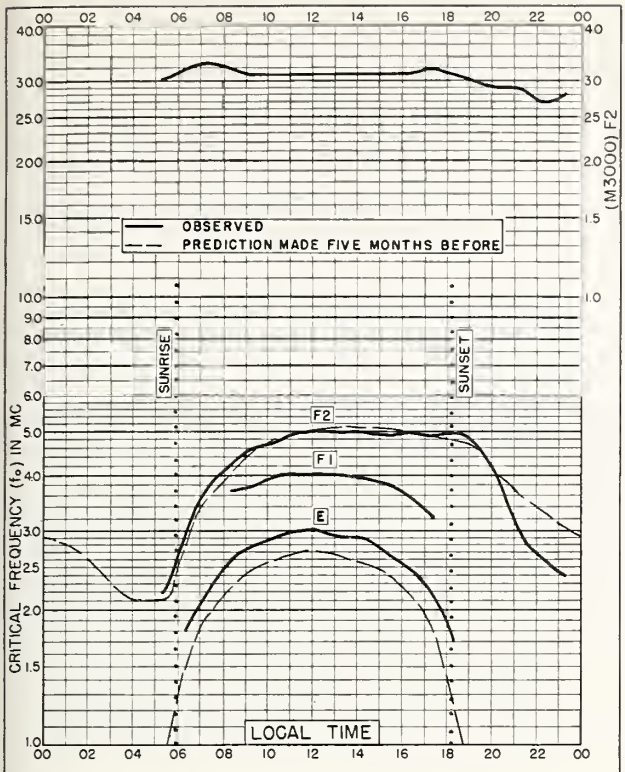


Fig. 129. CAMPBELL I.
52.5°S, 169.2°E MARCH 1954

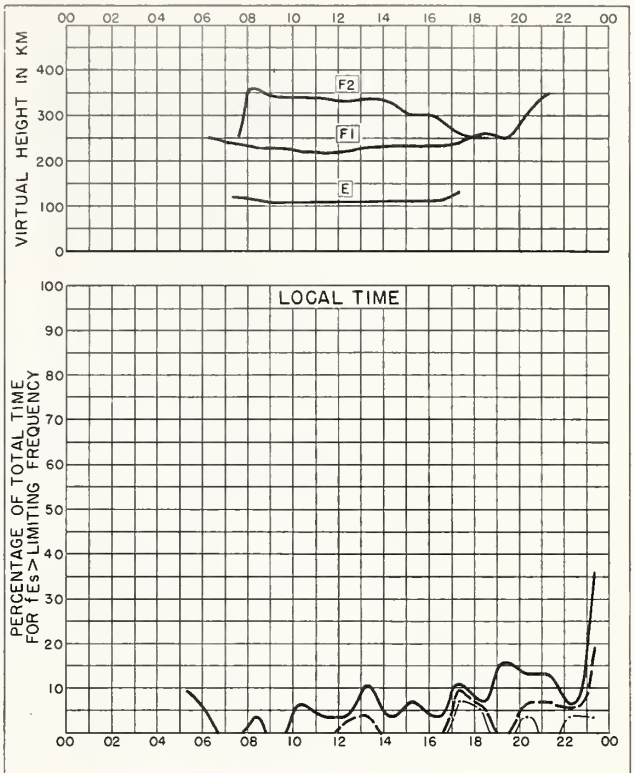


Fig. 130. CAMPBELL I. MARCH 1954

NBS 490

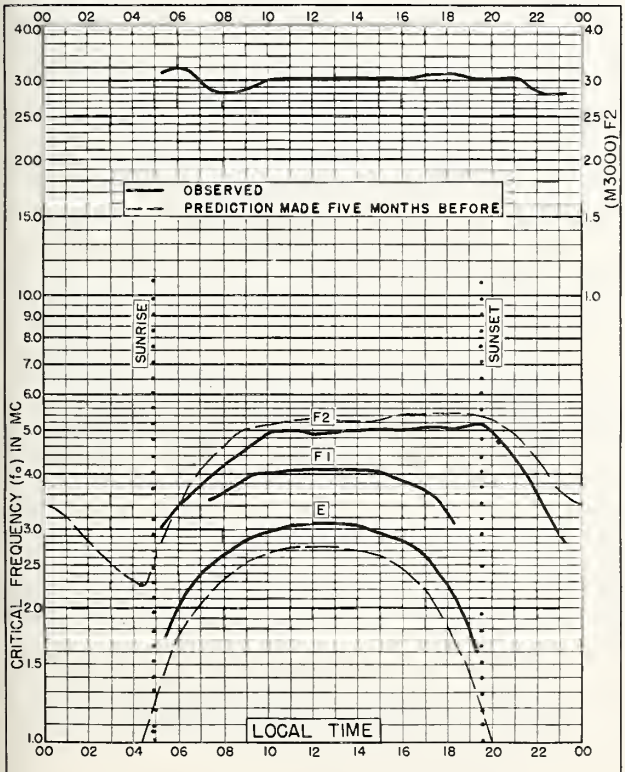


Fig. 131. CAMPBELL I.
52.5°S, 169.2°E FEBRUARY 1954

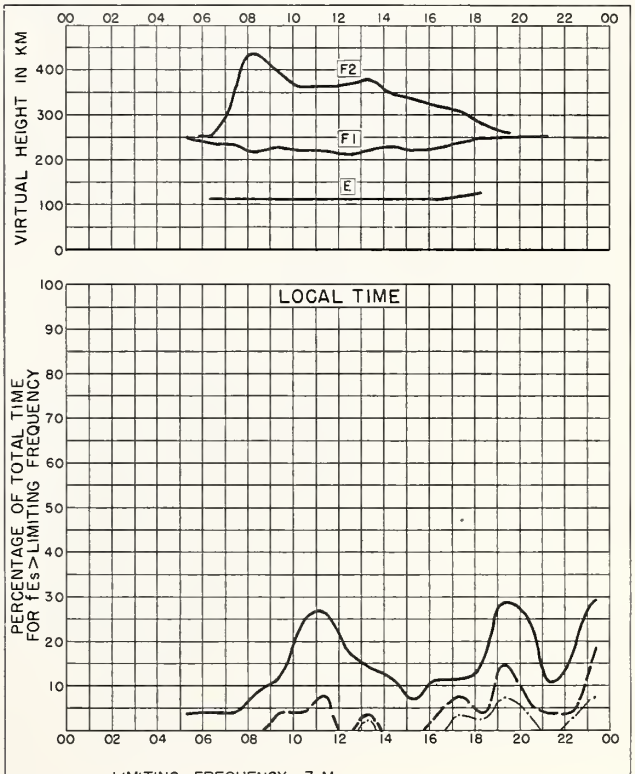


Fig. 132. CAMPBELL I. FEBRUARY 1954

NBS 490

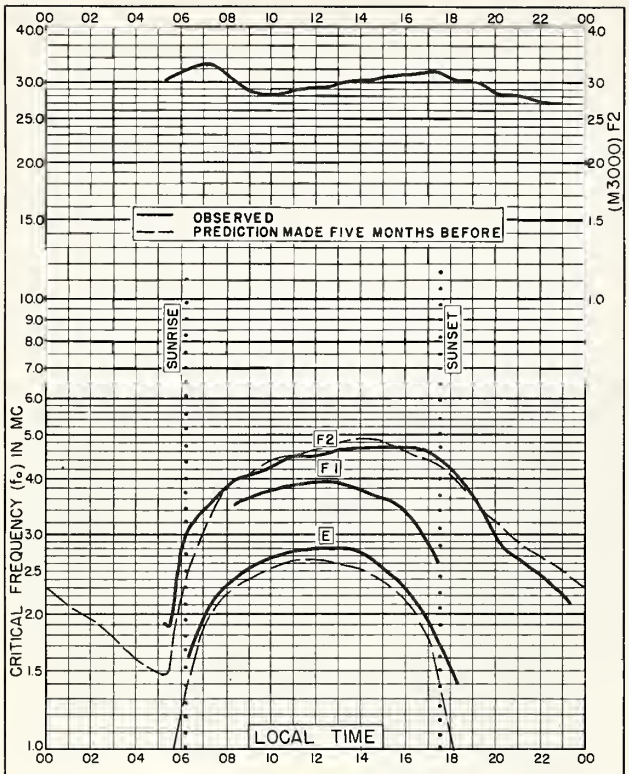


Fig. 133. CAMPBELL I.
52.5°S, 169.2°E SEPTEMBER 1953

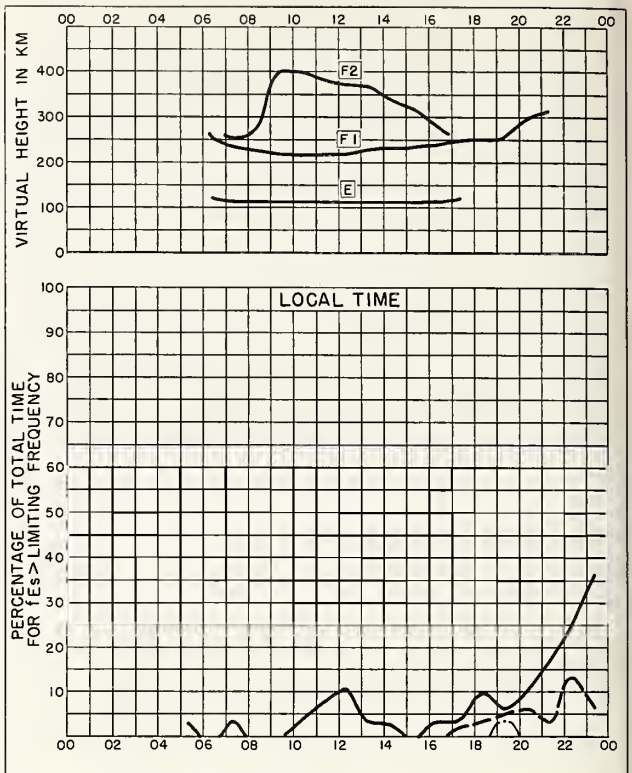


Fig. 134. CAMPBELL I. SEPTEMBER 1953

NBS 490

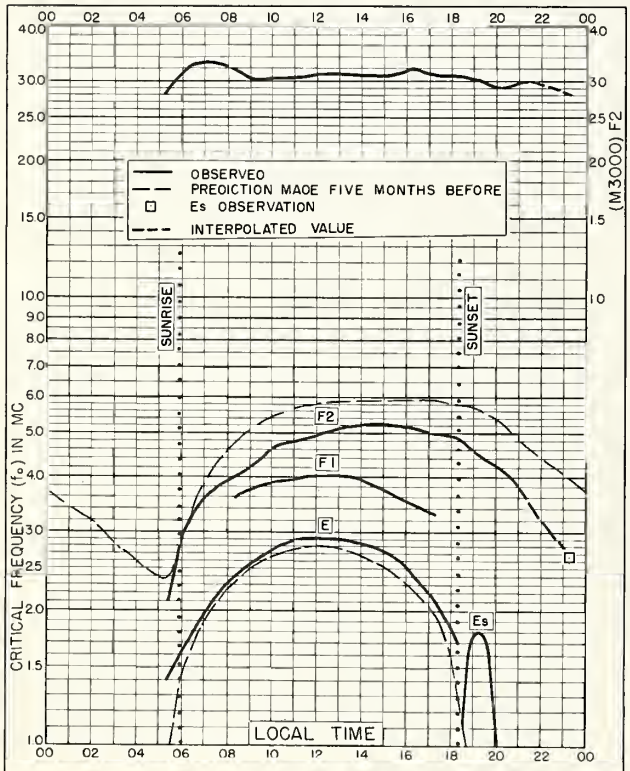


Fig. 135. CAMPBELL I.
52.5°S, 169.2°E MARCH 1953

NBS 503

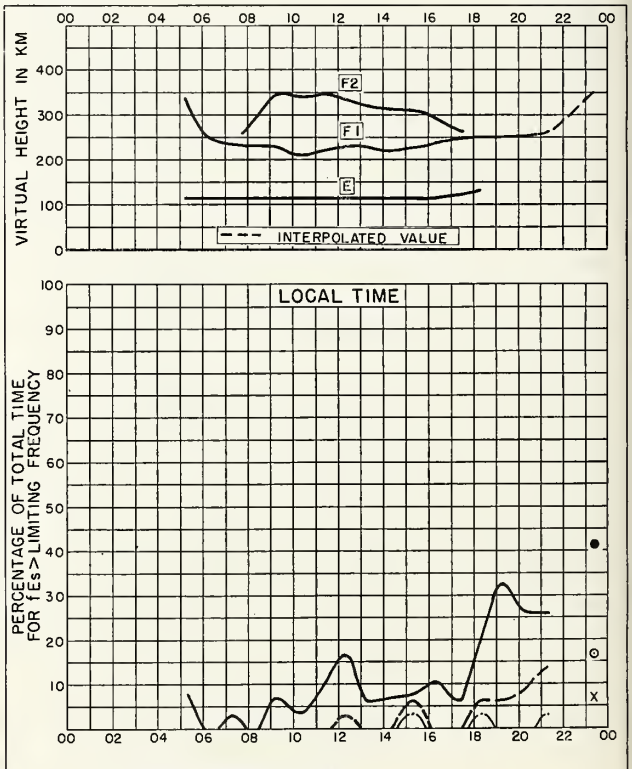


Fig. 136. CAMPBELL I. MARCH 1953

NBS 490

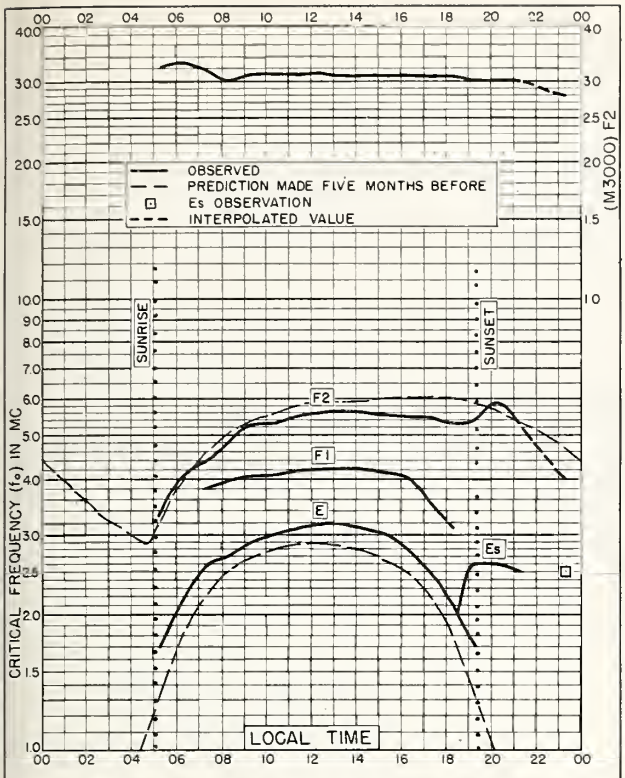


Fig. 137. CAMPBELL I.
52.5°S, 169.2°E FEBRUARY 1953

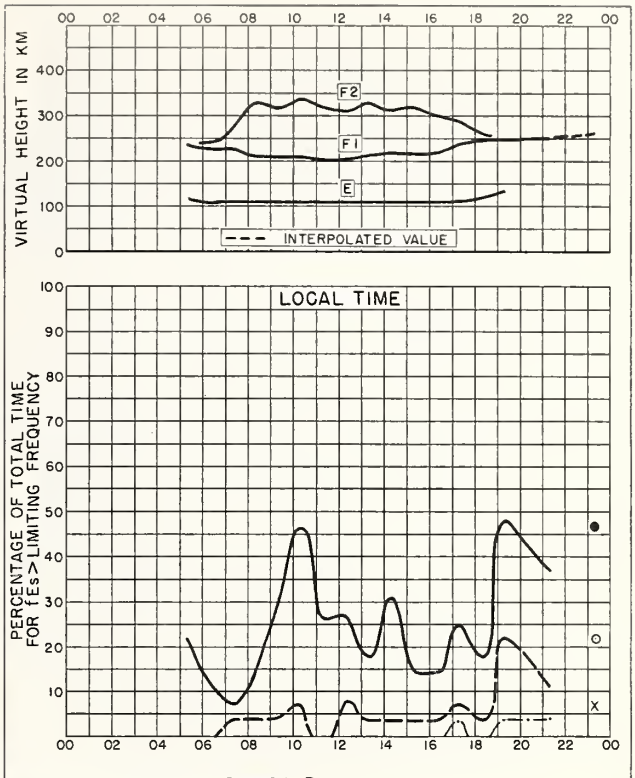


Fig. 138. CAMPBELL I. FEBRUARY 1953

NBS 490

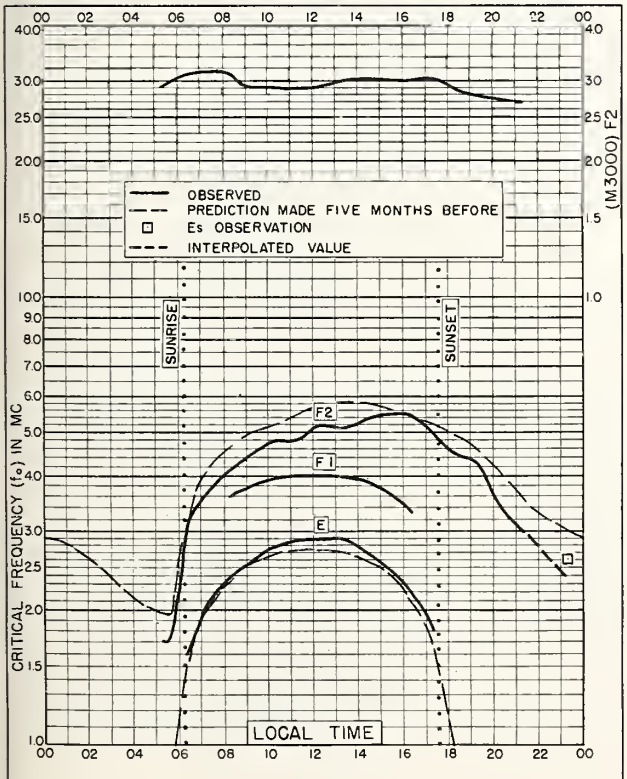


Fig. 139. CAMPBELL I.
52.5°S, 169.2°E SEPTEMBER 1952

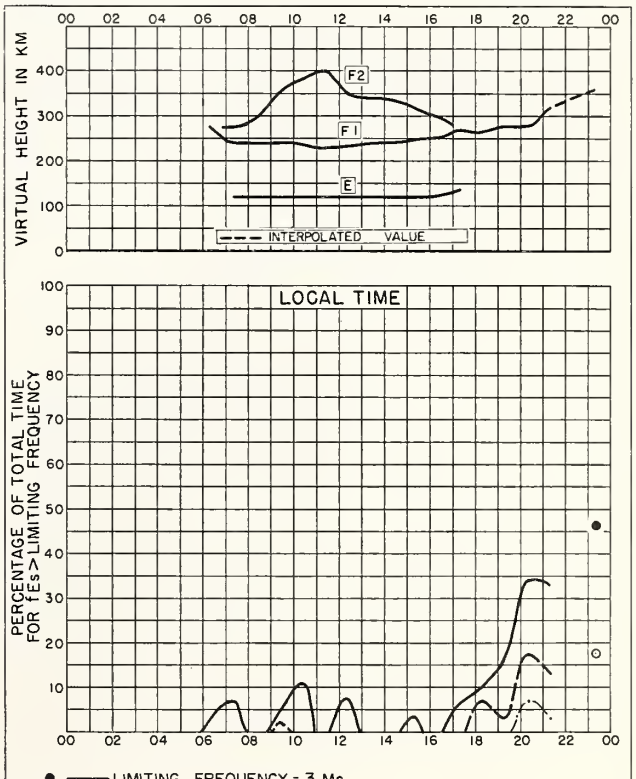


Fig. 140. CAMPBELL I. SEPTEMBER 1952

NBS 490

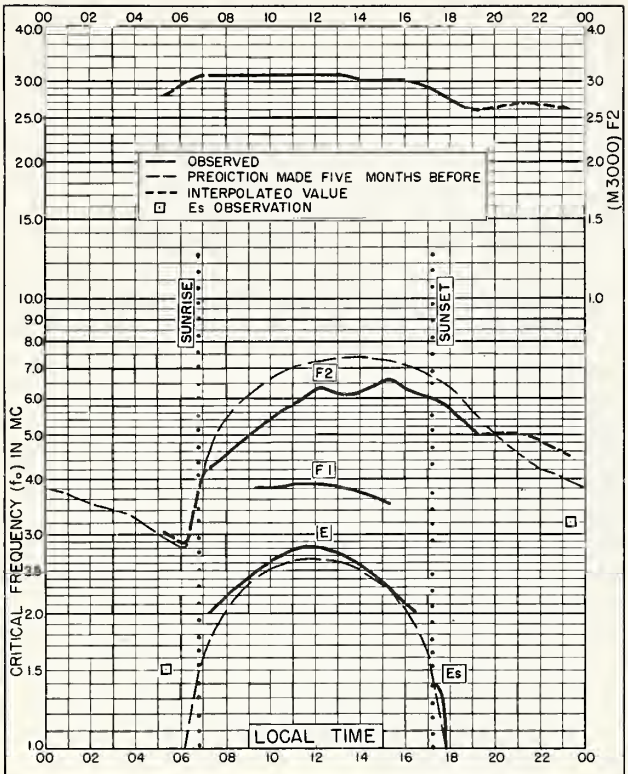


Fig. 141. CAMPBELL I.
52.5°S, 169.2°E APRIL 1952

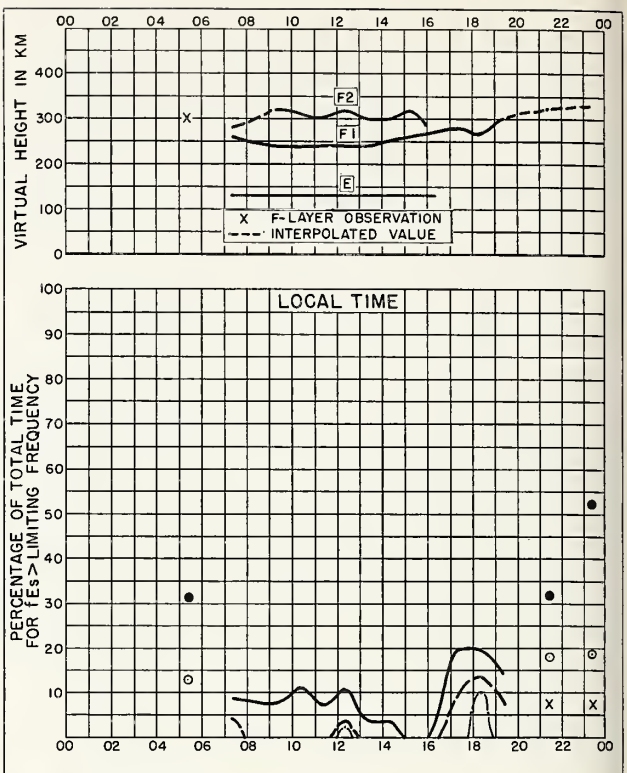


Fig. 142. CAMPBELL I. APRIL 1952

NRS 490

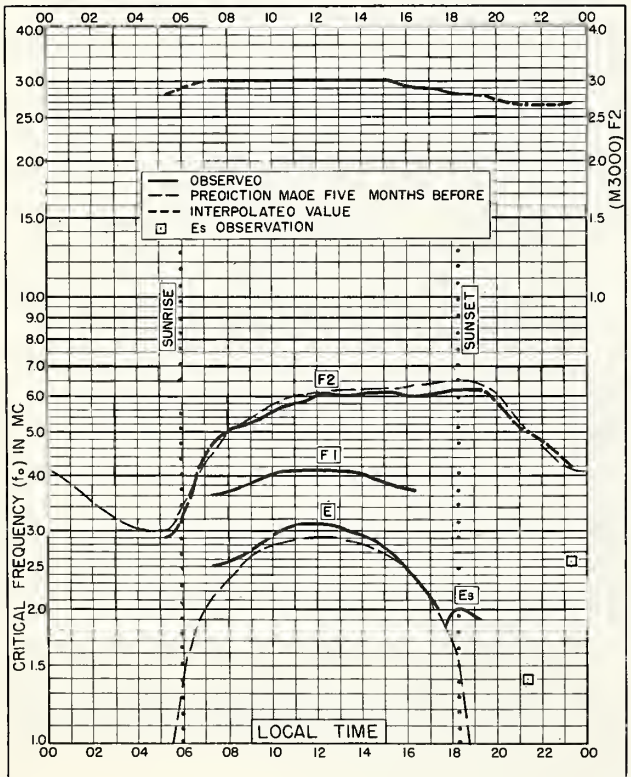


Fig. 143. CAMPBELL I.
52.5°S, 169.2°E MARCH 1952

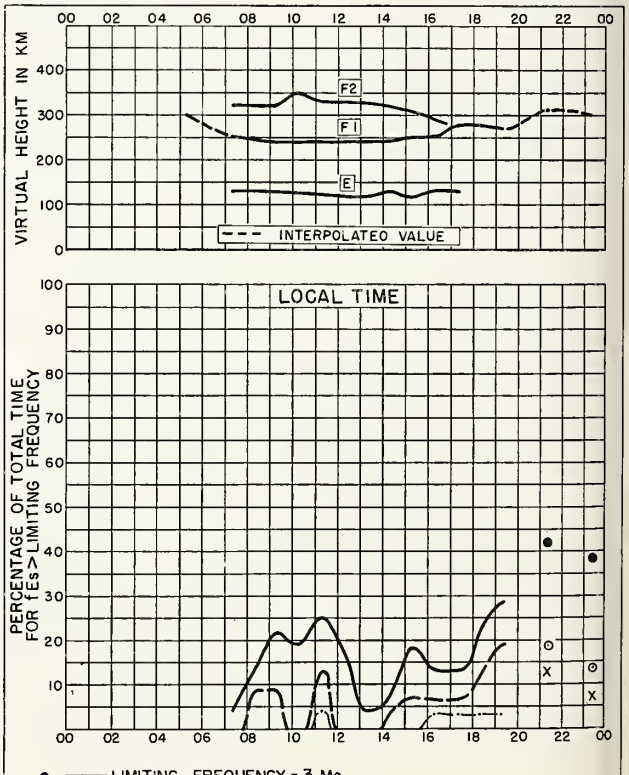


Fig. 144. CAMPBELL I. MARCH 1952

NBS 490

Index of Tables and Graphs of Ionospheric Data

in CRPL-F152 (Part A)

Index (CRPL-F152 (Part A), continued)

Index (CRPL-F152 (Part A), concluded)

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